

HOW DO PEOPLE RESPOND TO ROLE MODELS? THE ROLE OF ANALOGICAL  
REASONING AND SELF-ESTEEM IN COMPARISONS TO SUPERIOR OTHERS

by

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# How Do People Respond to Role Models? The Role of Analogical Reasoning and Self-Esteem in Comparisons to Superior Others

## Abstract

What makes a role model relevant? In previous research, we found that individuals were influenced by a role model only when they were similar to the role model on superficial attributes such as occupation type; participants perceived a role model in their own career area as relevant, but perceived a career mismatched role model as irrelevant (Lockwood & Kunda, 1997). In my dissertation, I demonstrated that the need for career matching may be overcome if individuals can form an analogy between themselves and a role model based on structural rather than superficial similarities. In two studies, I highlighted a structural similarity by indicating that a career mismatched role model had overcome an obstacle in order to achieve success; because participants faced obstacles in their own careers, it was expected that they would be able to form an analogy between themselves and the role model despite the difference in occupation type, and so would perceive the otherwise irrelevant role model as relevant.

In Study 1, low self-esteem participants' self-perceptions were more strongly affected by a career mismatched role model who had overcome poor university grades than by a role model who had not; high self-esteem participants were affected by both role models. In Study 2, both high and low self-esteem White participants' self-views were more strongly affected by a Black role model who had overcome discrimination than by a White role model who had not overcome this obstacle. High and low self-esteem participants' self-schemas also influenced the kinds of structural similarities that they perceived themselves to share with the role models.

In both studies, the direction of a relevant role model's impact was determined by self-esteem; low self-esteem participants, who were less likely to believe that they could

become as successful as the role model, were negatively affected; high self-esteem participants, who were more likely to see the role model's achievements as attainable, were positively affected.

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## Dedication

This thesis is dedicated to my parents, Anne and Ken Lockwood, with gratitude for their love, support, and encouragement.

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## Introduction

At the 1998 Nagano Olympics, Canadian Elvis Stojko completed a spectacular figure skating program, despite a painful groin injury, and won a silver medal. His skating was lauded in the press as a powerful example of courage under adversity (e.g., Deacon, 1998). A five year-old girl became a focus of media attention after she wrote to Stojko, and claimed he was her "hero;" his performance had inspired her to skate in her first competition despite the fact that she was suffering from the 'flu (Wilkes, 1998). In our society, athletes, actors and other public figures are frequently described as "role models," individuals whose stellar accomplishments inspire others to achieve success in their own lives. It is not clear, however, that people will always see such outstanding individuals as relevant to them. A figure skating hero may inspire aspiring skaters, but can he similarly inspire ambitious hockey players, musicians, or lawyers?

### What Makes a Role Model Relevant?

Our own research on social comparisons suggests that it is unlikely that individuals will be influenced by stars who excel in areas outside their own fields of interest (Lockwood & Kunda, 1997). We found occupational similarity to be crucial in determining the relevance of role models; future teachers were inspired by a highly successful teacher, but were unaffected by a successful accountant. Thus, people can draw inspiration from an outstanding other, but only when the other is similar to them on dimensions like occupation type.

Intuitively, however, it seems that it should be possible to bridge such gaps in similarity so that a seemingly irrelevant role model becomes relevant. People often gain inspiration from individuals with whom they share few obvious attributes. For example, Mother Theresa is hailed as a role model by many individuals who differ from her in nationality, background, and occupation; one may be inspired to take up a humanitarian cause even if one does not share her religious vocation. Dissimilar others may also have a

demoralizing effect; a struggling musician may feel his own achievements to be inferior when he discovers that a former high school classmate has become a Nobel Prize-winning scientist. Thus, it seems that one does not need to share a role model's occupation or other surface attributes in order for the high-achiever to be perceived as relevant to the self.

Research on analogy supports this intuition, suggesting that relevance judgments may be influenced by more than mere surface similarities. In analogical reasoning, people use a familiar source to understand or make inferences about an unfamiliar target. For example, students can learn about atomic structure by using the analogy of the atom as a tiny solar system; their familiarity with the structure of the solar system, the source, can help them understand the unfamiliar atom, the target (Reeves & Weisberg, 1994). Similarly, when individuals make social comparisons, using their knowledge of another person to make inferences about themselves, they are also applying analogical reasoning: They are mapping themselves onto another person, the source, in order to glean information about themselves. Thus, social comparisons to role models are a form of analogy. If individuals cannot draw an analogy between themselves and a role model, the other individual will be perceived as irrelevant for comparison purposes: no social comparison will take place. If, on the other hand, an analogy can be drawn, the role model may be perceived as relevant, and consequently, a social comparison can occur; one may judge oneself to be inferior to the other and so feel demoralized, or one may believe that one will become like the other in the future, and so feel inspired.

Analogical reasoning is constrained by the extent to which there are coherent correspondences between the source and target; one will only form an analogy if there is a good fit between the elements involved. One such constraint on analogical coherence is surface similarity, or the extent to which the attributes or superficial features of the elements are similar (Holyoak & Thagard, 1997); for example, all things being equal, a psychologist is more likely to form an analogy between herself and another psychologist

than between herself and a professional wrestler. Greater superficial similarity thus provides a better correspondence between the target and the source, increasing the likelihood that an analogy will be drawn. However, although such superficial similarities are important, more complex patterns of relations also contribute to the coherence of analogies (Holyoak & Thagard, 1997). For example, one can form an analogy between a planet's motion around the sun, and a moon's motion around the planet (Markman & Gentner, 1993). If one were to maximize superficial similarity, one would map the planet onto the planet because they share the most surface attributes. However, if one were to maximize structural similarity, one would map the planet onto the moon because they share a relational pattern; both are smaller bodies revolving around a larger one.

Indeed, such structural mappings may sometimes supersede mappings based on surface attributes. For example, in one study (Markman & Gentner, 1993), participants were shown two cartoon frames, one in which a woman receives food from a food bank employee, and another in which a woman feeds a squirrel. When asked to reflect on the two frames, participants mapped the woman in the first frame onto the squirrel rather than onto the woman in the second frame. The features of the woman and the squirrel are clearly highly dissimilar, but the underlying structure of the relationship, "receives food," is the same. The mapping of the woman onto the squirrel provides greater analogical coherence because it maximizes the correspondence between the structural relations in the two pictures (Markman & Gentner, 1993). Thus, relational similarities can overcome attribute dissimilarities among the elements of an analogy.

We can apply these principles of analogical reasoning to understand social comparisons to role models. At times, individuals may draw comparisons based on a straightforward attribute mapping between themselves and another person who looks similar, is the same age, or has pursued the same career. This was the case in our previous research (Lockwood & Kunda, 1997), in which participants compared themselves only to

those individuals who were in the same occupation as themselves. However, I suspect that under some circumstances, these featural mappings may be superseded by more complex, structural mappings. For example, a white feminist may map herself onto Martin Luther King, despite all the differences in race, gender, and occupation type, because they share an interest in overcoming discrimination. Although they differ in the types of discrimination that they are concerned with, the feminist can nevertheless map across domains, recognizing a correspondence between the civil rights leader's fight against racial discrimination and her own battle against gender discrimination. The deep, structural similarity can overcome the superficial dissimilarities, making a social comparison possible.

Social comparison research, however, has focused almost exclusively on superficial similarity as the determinant of a comparison other's relevance. In his *Theory of Social Comparison Processes*, Festinger (1954) argued that people prefer to compare themselves to similar others, but offered no clear definition of similarity. Most early social comparison research focused on similarity in levels of performance on various ability-related tasks (e.g., Hakmiller, 1966; Wheeler, 1966). For example, in one study, after completing a bogus test of "abstract social reasoning," participants preferred to compare themselves to another individual who had provided similar responses on the test (Hakmiller, 1966). In another study, after completing a bogus personality test, participants chose to see a score that was close to their own (Wheeler, 1966). Thus, it seems that individuals choose comparison others who are similar to them in terms of performance level. Researchers building on the original theory noted that attributes related to performance are also important in determining the relevance of comparison others; an aspiring violinist can better gauge her musical skill by comparing herself to another performer who has had the same amount of practice and training (for a review, see Goethals & Darley, 1977). For example, in one study, participants preferred to compare

themselves to a same-gender other on verbal and logic skills tasks when they believed that gender was related to performance (Zanna, Goethals, & Hill, 1975). Attributes on surrounding dimensions, such as gender, age, or attractiveness, may also be important in determining the choice of a comparison other even when these attributes are not in fact related to one's abilities on the comparison dimension; participants may habitually attend to such features because they have previously been found to be related to a variety of comparison dimensions (Miller, 1982; Wood, 1989). For example, women preferred to compare with similarly attractive others even when attractiveness was not related to performance (Miller, 1982). Overall, in virtually all of this research, comparisons are assumed to be guided by various superficial similarities (for a review, see Wood, 1989). Such surface similarity is important in determining the coherence of an analogy; however, it may not fully account for social comparisons that are predicated on more complex structural parallels between the self and a target other, as when a white feminist compares herself to a Black civil rights leader.

In addition, these studies have all focused on participants' choice of comparison other as a measure of a comparison other's relevance; presumably, people choose comparison others who are relevant, that is, others who provide them with an opportunity to make inferences about themselves. However, in daily life, one does not always have the luxury of choosing with whom to compare (cf. Wood, 1989); individuals can discover that they have been outperformed by another, and be influenced by this information, without consciously choosing to make a comparison. Moreover, because individuals do not always have conscious access to the cognitive processes that govern their behavior (Nisbett & Wilson, 1977), they may not always be aware that a role model is relevant and has influenced their self-perceptions. To assess relevance in my own research, therefore, I have measured not only participants' self-reported ratings of a target's relevance, but also the impact of the other on participants' self-perceptions.

Although this research is the first attempt to distinguish between structural and superficial similarity in social comparison effects, the notion that a comparison other's relevance may be based on more than mere attribute similarity has also been proposed by Tesser and his colleagues (e.g., Tesser, 1988; Tesser & Campbell, 1983). In his influential work on self-evaluation maintenance (SEM), Tesser (1988) has suggested that people may form connections with others based on "psychological closeness." Individuals will be influenced by others around them to the extent that they are in a "unit-relation" (Heider, 1958) with the other. In Heider's terms, a unit-forming connection can be based not only on attribute similarity, but also on such factors as physical proximity, shared experiences, and common fate. Thus, like analogy, psychological closeness may be based on structural similarity: There may be parallels in relations between the self and a comparison other beyond superficial attribute matching.

Tesser distinguishes between closeness and self-relevance, and these play different roles in his theory. Closeness determines whether or not another person will have an impact on the self. Relevance determines the direction of a close other's impact. If a close other outperforms one on a self-relevant dimension, a social comparison will occur. Because one's own performance will seem inferior by contrast, the impact will be threatening. If, however, a close other outperforms one on a dimension that is not self-relevant, no social comparison will occur. Instead, one will "bask in the reflected glory" (Cialdini, Borden, Thorne, Walker, Freeman, & Sloan, 1976) of the other person's achievements; because the dimension is not self-relevant, one can experience pride in the other's achievements (Tesser & Collins, 1988) without having the quality of one's own accomplishments called into question.

In contrast, in my view, the self-relevance of the comparison dimension will, like psychological closeness, contribute to the determination of whether or not a comparison other is relevant. When a superior other is successful in a domain that is personally

important to one, this increases the similarity between oneself and a star, thus increasing the likelihood that one will draw an analogy. For example, one is more likely to compare oneself to a star who is successful in one's own area of interest than to one whose achievements are in a nonrelevant domain (Lockwood & Kunda, 1997). However, although matching on dimensions like career type is important in making a comparison other relevant, I aim to show here that it is not a necessary condition for a comparison to take place. Even when a star excels in a domain that is not personally relevant, there may still be structural parallels between oneself and the star that make the star a relevant comparison other. The SEM model implies that a close other can offer self-enhancement precisely because the domain is not self-relevant, whereas I suggest the star other's achievements may indeed be personally relevant, but at a more abstract level, based on structural rather than superficial similarities. For example, when an aspiring doctor feels self-enhanced by her musician brother's success, one might argue that the doctor is simply basking in the reflected glory of the brother's achievements. However, it is also possible that she is mapping herself onto her brother, using his experience as an analogy for her own life; his ability to achieve success despite poor family support may allow her to make inferences about her own potential accomplishments (albeit in a different domain) in the same family environment. Thus, if the doctor is positively affected by her brother's achievements, this may be due to an analogy-based social comparison rather than to reflection.

Social comparison differs from reflection in that it engages one's personal rather than social identity; one's personal attributes or abilities are compared to those of the superior individual and are evaluated accordingly. If one believes that one may become like the successful other in the future, one may be inspired; if one sees oneself as irrevocably inferior to the other, one may be demoralized. In contrast, reflection engages one's group, or social identity: One experiences self-enhancement because another member of one's

group has achieved success; one's association with this outstanding person will enhance one's own status. Moreover, the actual effects of social comparison and reflection on the self will differ. Although reflection should result in pride in the other, and general self-satisfaction resulting from one's close connection with the successful other, it should not affect one's perceptions of one's abilities in one's own area of interest; a doctor who is basking in the reflected glory of her musician brother's achievements should feel pride in his success, but should not feel herself to be any more competent as a medical practitioner. In contrast, if a social comparison occurs, we would expect individuals' perceptions of their specific skills and their performance expectations to be influenced by the comparison.

In SEM research, it is difficult to tell whether reflection or social comparison has been induced because these studies do not typically examine effects on the self. Instead, studies have focused on how, when the domain is not self-relevant, individuals will inflate their evaluations of friends who outperform them (e.g., Tesser & Campbell, 1980; Tesser & Campbell, 1982), increase closeness to successful others (Pleban & Tesser, 1981), and express more positive affect when friends than strangers outperform them (Tesser & Collins, 1988; Tesser, Millar, & Moore, 1988). Although this evidence is consistent with the reflection hypothesis, suggesting that individuals try to maximize the benefits that they can draw from a close other who is successful in a nonrelevant domain, it does not preclude the possibility that social comparisons are also generated under these circumstances. Individuals may have experienced inspiration or demoralization if they were able to perceive structural similarities between themselves and the successful other, and may have made inferences about their ability to become similarly successful in their own area of interest.

I aim to show that a close other who achieves success in a nonrelevant domain can indeed have an impact on the self, but that this effect is due to an analogy based on structural similarity rather than to reflection. Specifically, we can overcome superficial

dissimilarities between an individual and a role model by highlighting deeper, relational similarities, and so make a seemingly irrelevant role model relevant. If one can perceive a more abstract goal or relationship that one shares with a superior other, one may be influenced by the other despite a host of overt dissimilarities. Moreover, if one can form an analogy with a superior other, one will not simply experience "pride in the other" (Tesser & Collins, 1988); rather, one may use the other's experience to make inferences about one's own abilities and potential for success. Thus, a successful other who is structurally similar can affect one's perceptions of one's own skills or attributes, providing either inspiration if one believes that one can attain comparable success, or discouragement if one's own accomplishments seem hopelessly inferior (Lockwood & Kunda, 1997).

One common, abstract theme that may contribute to structural similarity between individuals and a role model is the overcoming of adversity in order to achieve success. In Western literature and popular culture, protagonists must frequently overcome some kind of obstacle as they strive to achieve their goals (Frye, 1957). Individuals who have successfully surmounted their difficulties, such as a skater who overcomes a painful injury and wins a medal, a member of a minority group who overcomes a glass ceiling and achieves career success, or a student who wins an academic award despite a learning disability, offer people around them the hope that they, too, will be able to achieve their goals despite the difficulties they face. Because virtually everyone faces challenges in their careers and their personal lives, these individuals may be perceived as relevant role models; by mapping oneself onto them, one can make inferences about one's own ability to achieve success. It is not necessary that one share surface attributes with the role model in order to make the analogy. Rather, one must recognize that one has a problem in one's own life, just as the role model did in his or hers, and make the analogical mapping at this more abstract, structural level. Accordingly, in this research, I have focused on the extent to which a superficially dissimilar individual who has surmounted an obstacle might be

perceived as relevant: I expected that, despite the surface dissimilarities, individuals would identify with the role model's struggle to overcome adversity.

### Self-Esteem Moderates the Direction of a Relevant Role Model's Impact

If individuals can form an analogy between themselves and a superior other, a social comparison can take place, and the role model may exert an impact on the self. The direction of the social comparison's impact will be determined by the extent to which the individual is able to imagine a similarly successful future self. One may be inspired by the comparison, drawing the inference that one will be able to achieve a similar degree of success, or one may be demoralized, recognizing that the successful other is more outstanding than one can hope to be oneself. If one is to be inspired by a superior other, one must be able to imagine a self who is as outstanding as the other (Markus & Nurius, 1986). In previous research, we found that the impact of role models on the self was determined by the perceived attainability of a star target's achievements (Lockwood & Kunda, 1997). Individuals who believed that they would be able to improve their own standing and become as successful as the star in the future were positively affected. In contrast, those individuals who believed that the star target's achievements were out of reach, either because they were already too advanced in their careers to be able to achieve comparable success at the same career point or because they viewed their inferior abilities as fixed and incapable of improving, were negatively affected. It is difficult to draw inspiration from a better-off other if the success of the other seems unattainable (cf. Testa & Major, 1990; Wood & Van der Zee, in press).

Research on self-esteem suggests that high and low self-esteem individuals might differ in their beliefs about the perceived attainability of a role model's success, and so might respond differently when they encounter upward comparisons. In general, high self-esteem individuals have higher expectations regarding their ability to succeed at a variety of tasks than do low self-esteem individuals (Brockner, 1983; Jussim, Yen, & Aiello, 1995;

McFarlin & Blascovich, 1981; Shrauger, 1975). Low self-esteem individuals have less certainty about their skills and abilities (Baumgardner, 1990; Campbell, 1990), and thus have less confidence about what they may be able to accomplish. Whereas high self-esteem individuals have strong positive illusions about their abilities, low self-esteem individuals tend to have more evenhanded self-perceptions (Brown & Taylor, 1988). As a result, high self-esteem individuals may generally have more optimistic expectations that they will be able to become like an outstanding role model in the future, and so will be better able to draw inspiration from the role model. Because low self-esteem individuals have lower performance expectations and less confidence in their abilities, they may find it more difficult to imagine a self like a superior other, and so will be demoralized rather than inspired by the comparison.

In addition, high self-esteem individuals are more adept than low self-esteem individuals in the use of a variety of self-serving biases (for a review, see Blaine & Crocker, 1993): They tend to take credit for success, but avoid blaming the self for failure (Ickes & Layden, 1978; Jussim et al., 1995); they give greater credibility to positive feedback than negative feedback (Shrauger & Lund, 1975); and they overestimate their control over positive outcomes, but underestimate their control over negative outcomes (Alloy & Abramson, 1979; Blaine & Crocker, 1993). Given their dexterity in interpreting information in a way that is flattering to the self, we might expect high self-esteem individuals to construe a superior other's achievements as within their own reach (cf. Collins, 1996), and so be able to draw inspiration from them.

In contrast, low self-esteem individuals may be poorly equipped to use upward comparisons to self-enhance because they are motivated to avoid potential failure experiences. In general, whereas high self-esteem individuals are likely to try to self-enhance, low self-esteem individuals are more inclined to adopt self-protective behaviors (Baumeister, Tice, & Hutton, 1989; Tice, 1993). In keeping with their self-protective

stance, low self-esteem individuals attempt to avoid disappointment by setting lower goals (for a review, see Heatherton & Ambady, 1993) and by persisting less on tasks at which they might fail (Brockner, 1983; Campbell & Fairey, 1985; Shrauger & Sorman, 1977). Thus, we might expect low self-esteem individuals to show less motivation to self-improve than do high self-esteem individuals following an upward comparison. Whereas high self-esteem individuals may increase their strivings to become like the superior other, low self-esteem individuals may lack this motivation to self-enhance because they are more concerned with protecting themselves from the pain of a possible failure (cf. Crocker & Blaine, 1993).

In general, we would expect that high self-esteem individuals may be better equipped than low self-esteem individuals to use upward comparisons to self-enhance. Indeed, there is evidence to suggest that high self-esteem individuals will derive more benefit from upward comparisons than will low self-esteem individuals. Two field studies measuring the self-reported effects of comparisons found that high self-esteem individuals reported more positive responses to upward comparisons than did low self-esteem individuals (Buunk, Collins, Taylor, VanYperen, & Dakof, 1990; Wheeler & Miyake, 1992). In one study, cancer patients were asked to recall their past social comparisons, and rated the frequency with which they had experienced positive or negative affect following the comparison; high self-esteem individuals were less likely to report feeling bad after either upward or downward comparisons than were low self-esteem individuals (Buunk et al., 1990). In another self-report study, participants kept two-week diary records of their social comparisons in daily life; although high self-esteem individuals reported negative affective reactions to lateral and upward comparisons on a life "assets" dimension, their responses were less negative than were those of low self-esteem individuals (Wheeler & Miyake, 1992). A further self-report study found that high self-esteem individuals rated all comparisons, whether upward, downward, or lateral, as more

self-enhancing than did low self-esteem individuals (Wayment & Taylor, 1995). Thus, there is some evidence that high self-esteem individuals respond to upward comparisons more positively than do low self-esteem individuals. However, the self-reported responses of high and low self-esteem individuals may have been influenced by theories that these individuals have about the effects of comparisons (cf. Collins, 1996), and may not reflect the actual impact that such comparisons have.

Further evidence that high self-esteem individuals respond more positively to upward social comparison than do low self-esteem individuals comes from an experiment in which participants were exposed to a college student who was adjusting to college life better than they were. High self-esteem individuals showed greater mood improvement after the upward comparison than did low self-esteem individuals (Gibbons & Gerrard, 1989). However, a similar study also using a well-adjusted college student target found no differences between high and low self-esteem individuals in post-comparison mood (Aspinwall & Taylor, 1993). Moreover, neither study showed self-esteem differences on measures of post-comparison self-evaluation. Thus, although there is reason to believe that high self-esteem individuals will respond more positively to a role model than will low self-esteem individuals, the evidence to date is inconclusive.

Of course, it will not always be possible for high self-esteem individuals to imagine a self like the superior other; under these circumstances, self-enhancement may be blocked. The self-concepts of high self-esteem individuals are more accessible and more clearly defined than those of low self-esteem individuals (Baumgardner, 1990; Campbell, 1990; for a review, see Campbell & Lavalley, 1993). Because their high self-regard is chronically salient, high self-esteem individuals may be particularly distressed by information that challenges their superiority. Indeed, high self-esteem individuals have been found to be particularly sensitive to ego threats (Baumeister, Boden, & Smart, 1996). Thus, when confronted with an outstanding other who is unambiguously superior in an

important domain, high self-esteem individuals may be unable to avoid the realization that they themselves are inferior, and the outcome of the upward comparison will therefore be painful.

Indeed, two studies have shown that when outperformed by a superior other whose achievements are clearly above their own, high self-esteem individuals responded less positively than did low self-esteem individuals (Brown, Novick, Lord, & Richards, 1992, Study 4; Lockwood & Kunda, in press). In one study, low self-esteem individuals rated themselves more positively on a measure of attractiveness following exposure to a more attractive target with whom they shared a birthday; high self-esteem individuals did not show this self-enhancement effect (Brown et al., 1992). In another study, following exposure to a manifestly superior student, low self-esteem student participants were inspired, but high self-esteem student participants were self-deflated (Lockwood & Kunda, in press). High self-esteem individuals may have found that their ability to self-enhance was blocked by the unequivocal superiority of the star other. This may have been particularly distressing when the superior other was a peer, someone close to their own career stage, who had already accomplished more than they could hope to. It may therefore have been difficult for high self-esteem participants to imagine that they could improve sufficiently to become like the outstanding other, which may in turn have undermined their ability to draw inspiration from the other. To avoid this possibility, in the current studies, I used only role models who were sufficiently far advanced in their careers that their achievements could appear attainable to the student participants. It is somewhat puzzling that low self-esteem individuals were positively affected in these studies. It may be that, whereas high self-esteem individuals saw the outstanding other as a peer, someone with whom they could make a direct comparison, low self-esteem individuals saw the other as more distant; unlike high self-esteem individuals, low self-esteem individuals may not have made the direct comparison between the star students' achievements and their own.

Up to this point, I have discussed relevance and self-esteem as independent influences on a role model's impact; however, I also considered the possibility that these variables might interact. The perception of a role model's relevance may to some extent be influenced by the self-schemas (Markus, 1977) of the individual making the comparison. Individuals process information about other people according to what is important to their own self-perceptions (Fong & Markus, 1982). Indeed, self-schemas have been found to influence the role of surface similarities in social comparisons; in one study, participants who were schematic for gender were more likely to choose a same-gender than a different-gender comparison other than were participants who were aschematic for gender (Miller, 1984). Self-esteem may similarly influence the kinds of analogies that individuals form with others; different individuals may focus on different patterns of relationships, and so may differ in their judgments of a role model's relevance. For low self-esteem individuals, who are experiencing difficulties in their own lives, a role model's struggle to overcome an obstacle may form the basis for an analogy; although their difficulties may be in a different domain, they can nevertheless map their struggle onto that of the role model. For high self-esteem individuals, the struggle may be less important to them than the final triumph over adversity achieved by the role model; they aspire to a similar achievement in a domain important to them. Thus, self-esteem may affect the kinds of analogies that individuals form with role models.

In my dissertation, I have explored the role of relevance and self-esteem in determining the impact of role models on the self. In two studies, participants were exposed to a role model who was superficially dissimilar, but who shared an underlying life pattern with participants. Specifically, participants read about a career-mismatched role model who had overcome an obstacle in order to achieve success. Because all people face some kind of career difficulty at one time or another, it was hypothesized that participants would perceive parallels in their own lives, making the otherwise irrelevant role model

relevant. I expected that the direction of the relevant role model's impact would depend on people's global self-esteem. The role model in this case was sufficiently far ahead of participants' own career stage that they would have several years in which to achieve similar accomplishments. Therefore, for high self-esteem individuals, who have optimistic expectations about their ability to overcome adversity and achieve success, the role model's achievements would seem attainable; consequently, the impact of the role model was expected to be positive. In contrast, for low self-esteem individuals, who have less positive appraisals of their abilities, the role model's achievements would seem less attainable: Even when the role model is at a more advanced career stage, low self-esteem individuals would not be able to imagine a comparably successful self; accordingly, the impact of the role model was expected to be negative.

## Study 1

I hypothesized that a superficially irrelevant role model would be perceived as relevant if a structural similarity was highlighted. I created a description of a star architect who had achieved outstanding career success in the seven years since he or she had left university. The architect was thus in a more advanced career stage than participants, enabling them to believe that they, too, could achieve similar success in the future. In previous research, we found that students were positively affected by a role model in their own career area, but were unaffected by a role model in a different occupation (Lockwood & Kunda, 1997). Thus, because the participants were not themselves architecture students, it was expected that this role model would typically be irrelevant to them. To highlight a structural similarity between participants and the role model, half the participants received the additional information that the architect had overcome a drop in grades between high school and university. Because most students experience a significant decrease in their grades in their first term at university, I expected that overcoming a drop in grades would be a pattern that participants would identify with, thus making the otherwise irrelevant role model relevant to them. Although participants were not in the same program as the role model had been, it was expected that they would be able to find correspondences across academic domains, and apply the experience of the role model in architecture to their own experience in their respective majors. Instead of mapping at the attribute level by focusing on the role model's career area, participants were expected to focus on the structural similarity between themselves and the target; they, like the target, had to overcome initial academic difficulties in university. Thus, it was expected that the need for matching on superficial attributes that was found to be crucial in previous studies (Lockwood & Kunda, 1997) would be overcome by the introduction of this structural similarity.

I expected that the architect who had not overcome poor grades would be perceived as irrelevant, and would have no impact on participants. The impact of the relevant role model was expected to depend on the perceived attainability of the role model's achievements. I expected that the architect who had overcome poor grades would have a negative impact on low self-esteem individuals, who would view comparable success as unattainable, but a positive impact on high self-esteem individuals, who would perceive comparable success as attainable.

I also tried to manipulate attainability more directly: Before they read about a role model, half the participants received information that was designed to boost the perceived attainability of the target's achievements; they were provided with information suggesting that a drop in first year university grades would not prevent them from attaining future success. In this condition, I expected that the role model who had overcome poor grades would have a positive impact on both low and high self-esteem participants. However, this attainability manipulation proved to be problematic, as will be discussed below.

#### Method

Participants. Participants were 109 female and 42 male University of Waterloo undergraduates enrolled in Introductory Psychology who participated for course credit. Participants' gender had no effect on any of the variables and therefore is not discussed further. Five participants were dropped from the study because their grades had gone up between high school and university, and a role model who had overcome poor grades would therefore not be relevant to them. Five additional participants were removed from the analyses because they disbelieved the cover story. One participant was excluded because he failed to complete all the measures. One final participant was excluded because his scores on two dependent measures were more than 4 standard deviations from the mean. A total of 139 participants were included in the analyses.

Pretesting. At the beginning of term, participants completed the Rosenberg Self-Esteem Scale (1965) as part of a larger prescreening questionnaire. They also provided their high school graduating averages and first term university grades as part of this questionnaire.

Procedure. Two to eleven weeks after completing the pretesting, participants were invited to take part in a study on the impact of journalism on social perception. They were told that they would be reading and answering questions about two articles written in different journalistic styles, to see whether their perceptions of the article would be influenced by the style in which the article was written.

The experimenter was unaware of participants' self-esteem scores.

Attainability Manipulation. All participants first read a bogus article from "Psychology Today" (see Appendix A). In the neutral condition, this article described some recent developments in the study of the visual cortex; this information was not expected to have any impact on the perceived attainability of the role model's success. In the increased attainability condition, this article discussed the drop in grades experienced by first year university students, and indicated that first year grades are not diagnostic of later performance, suggesting that first year grades will not prevent one from improving and becoming more successful in the future.

In keeping with the cover story, participants were then asked to rate the article on a series of items pertaining to the article's content (e.g., interesting, informative, etc.).

Target Manipulation. Next, participants in the no obstacles condition read a bogus newspaper article describing the achievements of an outstanding architect who had graduated from Waterloo seven years earlier. This individual was described as someone who had made a tremendous contribution to his or her field, who had been involved in some of the world's most prestigious architecture projects, and who had accomplished more already in his or her career than most architects do in their lifetimes. In the overcame

poor grades condition, participants read the same article, but a brief additional section was included, in which the role model indicated that he or she had experienced a drop in grades in his or her first term at Waterloo, but had overcome this initial difficulty: "My first year at Waterloo was a difficult one. I saw my grades drop way down after high school, and I was pretty worried for a while. But I just kept plugging away, and now I've managed to develop the career I always wanted." In the no obstacles condition, the information about overcoming poor grades was omitted. Male participants read about a male architect (Jeffrey Walker), and female participants read about a female architect (Jennifer Walker). Both articles are included in Appendix B.

I also included a no-target control group of participants who completed the dependent measures related to self-perceptions without first reading about a target.

Dependent Measures. After reading the article, participants in the no obstacles and overcame poor grades conditions were asked to rate the architect on 40 adjectives among which were embedded 10 that were positively related to career success (e.g., bright, ambitious), and 10 that were negatively related to such success (e.g., incompetent, lazy). All items were rated on an 11-point scale with end-points ranging from 1 (not at all) to 11 (very). The target rating scale is included in Appendix C.

Next, participants were told that, because their own personality might affect their perceptions of the person they read about, they would be asked some questions about themselves. All participants then rated themselves on the same items on which the targets had been rated. In addition, participants were asked to predict their future academic grades ("I plan to obtain an academic average of at least \_\_\_\_\_% this year"), and their class standing ("I plan to be in the top \_\_\_\_\_% of my class in the next academic term").

Participants then rated how relevant the role model was to them for the purpose of comparison on an 11-point scale with end-points labeled 1 (completely irrelevant) and 11

(very relevant). They then wrote an explanation of why they answered this question as they had (see Appendix D).

Next, participants completed a scale in which they rated six items regarding the attainability of the target's achievements (e.g., "Jeffrey Walker's achievements are out of my reach," "I will be as successful as Jeffrey Walker"), six items regarding the extent to which they identified with the target (e.g., "I thought about myself while I was reading about Jeffrey Walker," "Jeffrey Walker has no bearing on my life"), and six items regarding how positively they regarded the target generally (e.g., "I disliked Jeffrey Walker," "Jeffrey Walker is someone I'd like to work with"). Ratings on the attainability, identification, and positivity items were made on a 9-point scale with end-points labeled 1 (very strongly disagree) and 9 (very strongly agree). This scale is included in Appendix E.

Finally, participants rated the extent to which the target demoralized or inspired them on a 13-point scale with end-points labeled -6 (very demoralized) and +6 (very inspired). This scale is included in Appendix F.

Thus, we had a 2 (attainability type) by 3 (target type) design, with self-esteem included as a continuous predictor variable.

## Results and Discussion

Attainability Manipulation. The attainability manipulation had an unforeseen impact on participants. In the increased attainability condition, it was expected that the information that grades are not diagnostic would have no impact on participants on its own, but that it would interact with exposure to a relevant role model to boost participants' self-perceptions. However, this manipulation proved problematic in terms of its effect on participants' self-rating scores.

Self-rating scores were combined into a single index of success after first reversing the negative items (Cronbach's  $\alpha = .88$ ). Two dummy coded vectors were created to represent the three target type conditions; a third dummy coded vector was created to

represent the attainability condition<sup>1</sup>. Self-esteem scores were centered by subtracting the mean self-esteem score from each participant's score (Aiken & West, 1991)<sup>2</sup>. Self-ratings were then regressed on target type, self-esteem, and attainability.

I first assessed the pattern of results in the no-target control condition to see what impact the attainability information had on participants. Using a procedure described in West, Aiken, & Krull (1996), I tested for differences in participants' self-ratings at low (1 standard deviation (SD) below the self-esteem mean) and high (1 SD above the self-esteem mean) levels of self-esteem<sup>3</sup>. Unexpectedly, the increased attainability information on its own had an impact on participants' self-perceptions. No-target low self-esteem participants in the increased attainability condition rated themselves significantly less positively than those in the neutral information condition,  $t(42) = 2.82, p = .008$  (see Figure 1). In contrast, no-target high self-esteem individuals in the increased attainability condition rated themselves significantly more positively than those in the neutral information condition,  $t(42) = 2.47, p = .02$ . Because the attainability manipulation on its own had an impact on self-ratings, there may have been no further room for depression of self-ratings among low self-esteem individuals, or elevation of self-ratings among high self-esteem individuals. Contrary to predictions, in the increased attainability condition, there was a significant main effect of self-esteem,  $t(60) = 2.43, p < .0001$ ; low self-esteem individuals rated themselves significantly less positively than high self-esteem individuals. However, there were no other main effects or interactions, all  $ps > .15$ . Thus, because the increased

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<sup>1</sup>Dummy coding was used in all regression analyses. In analyses including all three target conditions, two vectors were created to represent the no obstacles, overcame poor grades, and no-target control conditions. In analyses including only those participants exposed to a star target, one vector was created to represent the no obstacles and overcame poor grades target conditions.

<sup>2</sup>Self-esteem was centered in all primary regression analyses.

<sup>3</sup>This procedure is used throughout the analyses to test for differences among the target groups at specified levels of self-esteem. Centered self-esteem scores were rescaled by conducting two linear transformations so that the zero-value for the scale was either at 1 SD below (low self-esteem) or 1 SD above (high self-esteem) the mean. To test the differences between the control groups, I created a dummy-coded vector to represent the two attainability conditions. I then conducted two regression analyses with only the no-target participants using the rescaled values for the continuous variable. Because the categorical variable was dummy coded, the test of the unstandardized beta for the attainability group vector in each equation represents a test of the differences between the two control groups at low and high self-esteem values.

attainability information influenced self-ratings, it is difficult to assess what impact the targets may have had in this condition.

Because the attainability manipulation was unsuccessful, I will report data only for participants in the neutral information condition ( $n = 75$ ), in which participants did not receive information that might have affected their self-ratings. Data including participants in the increased attainability condition are presented in Appendix G.

Ratings of Target. Success-related items were averaged into a single index of the target's success after first reversing the negative items (Cronbach's  $\alpha = .87$ ). Target ratings were regressed on target type and self-esteem. Neither the main effect of target type nor the target type by self-esteem interaction was significant, both  $p$ s  $> .25$ . Unexpectedly, there was a main effect of self-esteem,  $t(47) = 2.55$ ,  $p = .01$ ; participants with higher self-esteem rated both targets more positively than did participants with lower self-esteem (see Figure 2). However, this finding is consistent with previous research (Lockwood & Kunda, 1997; Pleban & Tesser, 1981) showing that individuals who were threatened by a superior other tried to reduce this threat by cutting the target down to size, minimizing the threat to themselves. Moreover, if anything, this works against my hypotheses regarding self-esteem and the impact of role models: If the targets are perceived as less impressive, they should be less, not more threatening to the self. However, I predicted that low self-esteem individuals, who perceived the targets less positively, would be more threatened by a relevant target than would high self-esteem individuals. In addition, even low self-esteem participants rated the targets very positively, suggesting that I was successful in portraying an outstanding role model.

Self-ratings. Self-ratings were averaged into an index of success as target ratings had been (Cronbach's  $\alpha = .89$ ). Self-ratings were regressed on self-esteem and target type. The multiple regression analysis revealed a significant target type by self-esteem

interaction,  $F(2, 69) = 6.21, p = .003$ . In the no-target control condition, there was no relationship between self-esteem and self-ratings,  $r = .09, p = .66$ .

I then tested for differences between the target groups at specified levels of the self-esteem measure<sup>4</sup>. At low levels of self-esteem (1 SD below the self-esteem mean), participants in the overcame poor grades condition rated themselves significantly less positively than participants in the no-target condition,  $t(69) = 2.81, p = .006$ , but no differently than did participants in the no obstacles condition,  $t(69) = 1.41, p = .16$  (see Figure 3). The self-ratings of low self-esteem participants in the no obstacles condition did not differ significantly from those of no-target participants,  $t(69) = 1.57, p = .12$ . In contrast, at high levels of self-esteem (1 SD above the self-esteem mean), participants who read about the target who overcame poor grades rated themselves marginally more positively than did no-target controls,  $t(69) = 1.94, p = .06$ . Unexpectedly, high self-esteem participants in the no obstacles condition also rated themselves more positively than did high self-esteem no-target controls,  $t(69) = 3.04, p = .003$ . High self-esteem participants in the overcame poor grades and no obstacles conditions did not differ significantly in their self-ratings,  $t(69) = 1.55, p = .13$ .

It is possible that the differences between high and low self-esteem participants' responses to the target were due to a third variable, their past or current level of academic success: Low self-esteem individuals may have responded negatively to the overcame poor grades target merely because the target's comments about grades reminded participants of their own low grades, whereas high self-esteem individuals may have responded positively to this target because their grades were higher. Indeed, self-esteem was found to be positively correlated with both high school grades ( $r = .23, p = .007$ ) and first term

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<sup>4</sup>To test the differences between the no-target control group and the two star target groups, two dummy coded vectors were created in which the control group was coded as the comparison group (assigned zeros). I then conducted two regression analyses using the rescaled values for self-esteem (with the zero-value for the scale at 1 SD above and below the mean). The test of the unstandardized beta for each target type vector represents a test of the difference between the control group and the star target group assigned 1 for that vector. To test the difference between the two star target groups, I recoded the no obstacles group as the comparison group.

university grades ( $r = .21, p = .02$ ). However, a covariance analysis ruled out this conjecture. The target type by self-esteem interaction remained significant when either high school grades ( $F(2, 68) = 7.34, p = .001$ ) or first term university grades ( $F(2, 68) = 5.91, p = .004$ ) were controlled for. This suggests that it is participants' global self-view, rather than the salience of their current or past academic standing, that is determining the impact of the role model on self-evaluations.

Overall, the star architect who overcame poor grades had a negative impact on the self-views of low self-esteem participants, but a positive impact on the self-views of high self-esteem participants. The architect who had not overcome any obstacle had no impact on low self-esteem participants, but had a positive impact on high self-esteem participants. Thus, the obstacle, poor grades, made the irrelevant target relevant for low self-esteem participants, as predicted. However, for high self-esteem individuals, the obstacle had no such effect because they viewed the seemingly irrelevant no obstacles target as relevant.

Grade Predictions. Grade predictions were regressed on target type and self-esteem. The target type by self-esteem interaction was significant,  $F(2, 69) = 5.12, p = .008$ . Within the no-target control condition, there was no relationship between self-esteem and grade predictions,  $r = -.26, p = .21$ . This finding is somewhat surprising, given that participants' past high school and university grades were positively correlated with self-esteem.

I then tested for differences among the target groups at specified levels of self-esteem (1 SD below and above the self-esteem mean). Low self-esteem individuals who read about the target who overcame poor grades did not differ in their grade predictions from low self-esteem no-target participants,  $t(69) = .39, p = .70$ , or low self-esteem no obstacles participants,  $t(69) = 1.58, p = .12$ . Unexpectedly, low self-esteem participants who read about the no obstacles target predicted lower grades than did no-target controls,  $t(69) = 2.06, p = .04$  (see Figure 4). High self-esteem participants who read about the

overcame poor grades target did not differ in their grade predictions from no-target controls,  $t(69) = .21$ ,  $p = .83$ , but surprisingly, predicted lower grades than no obstacles participants,  $t(69) = 2.16$ ,  $p = .03$ . High self-esteem individuals who read about the no obstacles target predicted somewhat higher grades than no-target controls,  $t(69) = 1.89$ ,  $p = .06$ .

Thus, the target who overcame poor grades had no impact on grade predictions for either high or low self-esteem individuals. In contrast, the no obstacles target depressed low self-esteem individuals' grade predictions, but boosted those of high self-esteem individuals. This is problematic, given that I expected only the overcame poor grades target to have an effect on participants. Moreover, these findings are complicated by the fact that I did not find the expected positive correlation between grades and self-esteem in the no-target control condition. Given this problem within the control group, it is difficult to assess what impact the targets may have had on participants' grade predictions.

Class Standing Predictions. Class standing predictions were regressed on target type and self-esteem. A multiple regression analysis revealed a significant self-esteem by target type interaction on the class standing measure,  $F(2, 69) = 5.77$ ,  $p = .005$ . Within the no-target control condition, there was a significant relationship between self-esteem and class standing predictions,  $r = .48$ ,  $p = .02$ ; low self-esteem participants predicted a better class standing than did high self-esteem participants. This finding is surprising, particularly given that self-esteem was positively correlated with participants' high school and university grades.

I then tested for differences among the target groups at specified values of self-esteem (1 SD below and above the self-esteem mean). Low self-esteem participants exposed to the overcame poor grades target did not differ in their class standing predictions from the no-target controls,  $t(69) = 1.47$ ,  $p = .15$ , or from the no obstacles participants,  $t(69) = .54$ ,  $p = .59$ . Low self-esteem participants exposed to the no obstacles target

predicted a poorer class standing than did no-target controls,  $t(69) = 2.15, p = .03$  (see Figure 5). In contrast, high self-esteem participants exposed to the overcame poor grades target predicted a higher class standing than did no-target controls, although this effect was only marginally significant,  $t(69) = 1.83, p = .07$ ; high self-esteem participants exposed to the no obstacles target also predicted a higher class standing than did no-target controls,  $t(69) = 2.79, p = .007$ . High self-esteem participants in the overcame poor grades condition did not differ in their class standing predictions from high self-esteem no obstacles participants,  $t(69) = 1.36, p = .18$ .

Thus, the overcame poor grades target had no impact on low self-esteem participants' class standing predictions, but a positive impact on high self-esteem participants' predictions. Unexpectedly, the no obstacles target had a negative impact on low self-esteem participants' predictions and a positive impact on high self-esteem participants' predictions. The effect of the no obstacles target is surprising, given that I had expected that participants' predictions would be influenced only by the target who had overcome poor grades. Moreover, as was the case with grade predictions, these data are complicated by the finding that, in the no-target control group, participants with lower self-esteem unexpectedly predicted better class standings than did individuals with higher self-esteem.

Relevance Ratings. Relevance ratings were regressed on target type and self-esteem. A regression analysis revealed a significant target type by self-esteem interaction,  $t(50) = 2.55, p = .01$ . Low self-esteem participants tended to rate the overcame poor grades target as more relevant than the no obstacles target, although this effect was only marginally significant,  $t(50) = 1.85, p = .07$  (see Figure 6). High self-esteem participants did not differ significantly in their ratings of the overcame poor grades target and the no obstacles target,  $t(50) = 1.60, p = .11$ . Neither main effect was significant (both  $ps > .20$ ).

I had expected participants to perceive the overcame poor grades target as more relevant than the no obstacles target; this hypothesis was tentatively supported for low self-esteem individuals. Unexpectedly, high self-esteem participants rated both targets as equally relevant; however, this finding is consistent with the self-ratings results, which indicate that high self-esteem individuals were positively affected by both targets.

Explanations. Participants' open-ended explanations of their relevance ratings shed further light on their responses. It was expected that the overcoming of poor grades would be a structural similarity that participants would identify with, superseding the mismatch on occupation type. Because participants were expected to form an analogy between themselves and the target in this condition, it was expected that those participants who read about the target who had overcome poor grades would be less likely to indicate that they differed from the target than those who read about the target who had not overcome poor grades. Two judges unaware of the study's hypotheses and of participants' self-esteem type or experimental condition coded these data for any mention that participants perceived themselves to be dissimilar to the target. Responses of participants who read about the target who had overcome poor grades were also coded for an indication that the relevance of the target was affected by the target's overcoming of an obstacle. Because participants at higher and lower levels of self-esteem differed in their responses to the targets. I also examined self-esteem differences on these open-ended measures; participants were divided into high and low self-esteem groups based on a median split of the overall self-esteem score.

Participants were considered to indicate a dissimilarity if they mentioned that they were different from the target in terms of their occupation type, personality traits, personal attributes, or goals. Agreement between the two judges on the dissimilarity coding was 84%; discrepancies were resolved by discussion between the two judges. I expected that participants who read about the target who overcame poor grades would be less likely to

mention dissimilarities between themselves and the target than would participants in the no obstacles condition. Among low self-esteem participants, this was the case (see Table 1): Whereas 73% of low self-esteem participants in the no obstacles condition noted differences between themselves and the star, only 36% of low self-esteem participants who read about the target who overcame poor grades did so; this difference was marginally significant,  $z = 1.86$ ,  $p = .06$ . In contrast, high self-esteem participants exposed to the no obstacles target (30%) and the target who had overcome poor grades (40%) did not differ in the number of differences they noted,  $z = .52$ ,  $p = .60$ . Among participants in the no obstacles condition, high self-esteem individuals were less likely to note dissimilarities than were low self-esteem participants,  $z = 2.13$ ,  $p = .03$ , whereas among participants exposed to the target who overcame poor grades, high and low self-esteem participants did not differ in the number of dissimilarities they mentioned,  $z = .19$ ,  $p = .84$ . These findings are consistent with the findings on the self-rating and relevance measures: Low self-esteem individuals indicated the most differences between themselves and the target that had no impact on them, and that they rated as least relevant to them. High self-esteem participants indicated few differences between themselves and either target, rated both as equally relevant, and were positively affected by both.

Why were high self-esteem individuals less likely to note differences between themselves and the no obstacles target than were low self-esteem individuals? It may be that high self-esteem individuals are more motivated to pursue social comparisons that offer them the opportunity to boost their self-perceptions than are low self-esteem individuals. Indeed, high self-esteem individuals are more likely than low self-esteem individuals to pursue self-enhancement strategies (Baumeister, Tice, & Hutton, 1989; Tice, 1993); thus, they may seek to draw analogies with role models based on unanticipated structural similarities that they note between themselves and the target. For example, as one high self-esteem individual noted,

Although Jeffrey and I are in completely different fields, I will also like to be as successful. After graduation as an accountant, I aspire to become one of the highest paid and recognized either as an accountant or in a related commercial field.

Thus, high self-esteem individuals may have perceived unforeseen structural similarities between themselves and the targets. Despite the difference in their career choices, high self-esteem individuals noted parallels between themselves and the superior other: Both are seeking top positions in their respective fields. Low self-esteem individuals, who are less likely to expect a top position for themselves (McFarlin & Blascovich, 1981), and less motivated to pursue a self-enhancement strategy (Baumeister et al., 1989), may have been less inclined to draw this parallel.

The raters also coded responses of participants exposed to the target who overcame poor grades for any mention of the obstacle that the target had dealt with. Altogether, 38% of participants in this condition gave some indication that the target had overcome a drop in grades. In many cases, participants drew an explicit analogy between themselves and the target in their responses. As one participant wrote,

Although I'm not in architecture, I am a university student just the same. Like Jennifer, my marks in first year dropped from high school, however, as long as you have the confidence and the endurance to make it through school there is a good possibility that anyone can be successful like her. I think Jennifer is an inspiration to all struggling students, therefore, I find her relevant for the purpose of comparison.

Or, as another student noted,

She is relevant because she said in the article that she had a rough time first year (seeing her grades drop) and she fought through and had done really

well for herself. This gives me hope that there are good things ahead and if she can do so well -- there is a possibility for all of us.

For these students, the role model's ability to surmount an obstacle is personally relevant; they can draw an analogy between the target's experiences and their own, and make the inference that they, too, may be able to overcome their academic difficulties.

Surprisingly, however, there was a self-esteem difference in the number of participants mentioning poor grades: 64% of low self-esteem participants noted that the target, like them, had experienced poor initial grades, whereas only 20% of high self-esteem participants noted this connection (see Table 1); this difference was significant,  $z = 2.20$ ,  $p = .02$ .

Why might low self-esteem participants be more likely to take note of the initial setback experienced by this target? It is possible that low self-esteem participants are more likely than high self-esteem individuals to believe that they will face obstacles in their quest for success; because they have less confidence in and certainty about their abilities, they may be more concerned that they will face difficulties in their academic and career life. Thus, an "underdog," a person who achieves success despite initial setbacks, may be particularly relevant to them. However, low self-esteem individuals may nevertheless be negatively affected by such a role model if they believe that they will have difficulty overcoming the obstacles in their own lives. High self-esteem individuals may see the role model who overcame an obstacle as relevant; indeed, they were positively affected by this target. However, because they are able to find other connections between themselves and the other, such as a drive to reach the top of their respective careers, they may have been less likely to mention the obstacle in their relevance explanations.

Identification With Target. Identification items were averaged into a single index of identification after first reversing the negative items (Cronbach's  $\alpha = .87$ ). Identification ratings were regressed on target type and self-esteem. The identification results parallel

those for the relevance measure (see Figure 7). The multiple regression analysis revealed a significant target-type by self-esteem interaction,  $t(47) = 2.31, p = .03$ . As we would expect, low self-esteem participants identified with the overcame poor grades target more than with the no obstacles target,  $t(47) = 2.07, p = .02$ . High self-esteem participants did not differ in their identification with the two targets,  $t(47) = 1.06, p = .29$ . Again, this is consistent with the finding that both targets had a positive impact on the self-ratings of high self-esteem individuals. Neither the target type main effect nor the self-esteem main effect was significant, both  $ps > .30$ .

Why might high self-esteem participants have identified with the no obstacles target? It may be that high self-esteem individuals are better equipped than low self-esteem individuals to draw self-serving comparisons; they may be motivated to construe even a relatively irrelevant other as relevant to them in order to self-enhance (cf. Collins, 1996). Thus, high self-esteem individuals may have been motivated to draw parallels between their own career areas and those of the target. We would expect this to be particularly likely to the extent that participants are in occupations that share similarities with architecture. Some careers, such as accounting, law, or medicine, share a number of features in common with architecture: they involve specialized academic training, professional internships, and are generally well-paid. Other occupations, such as recreation management and social work, involve fewer obvious parallels with architecture. Accordingly, participants' occupations were coded for similarity to the target on a three-point scale with endpoints labeled 1 (not at all similar) to 3 (highly similar). Overall, 25% of participants were coded as having occupations that were "highly similar" to architecture. Moreover, in the no obstacles condition, 38% of participants were planning to pursue a career rated as highly similar to architecture. This may have facilitated the efforts of high self-esteem individuals to draw parallels between themselves and the no obstacles target. It was not merely the case that high self-esteem individuals were more likely than low self-esteem individuals to be in an

occupation similar to architecture; similarity of career area was not correlated with self-esteem,  $r = .05$ ,  $p = .70$ ; rather, high self-esteem participants appear to be more likely than low self-esteem participants to use shared occupational features to construe an otherwise irrelevant role model as relevant.

If this were the case, we would expect that among high self-esteem participants, those individuals who are in occupations that are more similar to architecture would be more likely to identify with the target than would those who are in highly dissimilar occupations; this should be true regardless of whether or not the target has overcome an obstacle. In contrast, because low self-esteem individuals are less likely to construe themselves as similar to a successful other, we would not expect occupational similarity to influence the extent to which they identified with either target. To test this, I regressed participants' identification ratings on self-esteem and ratings of similarity to architecture, collapsed across target condition. The self-esteem by similarity interaction was marginally significant,  $F(1, 40) = 3.17$ ,  $p = .08$ . At high levels of self-esteem (1 SD above the self-esteem mean), the regression of identification ratings on similarity to architecture was significant,  $t(40) = 2.73$ ,  $p = .009$ ; high self-esteem individuals who were in occupations more similar to the architect identified more with the architect (see Figure 8). At low levels of self-esteem (1 SD below the self-esteem mean), the regression of identification ratings on similarity to architecture was not significant,  $t(40) = .07$ ,  $p = .95$ . This is consistent with my conjecture that high self-esteem individuals use their occupational similarity to the target to boost the extent to which they identify with the target, thus maximizing the target's self-enhancing benefits; those with more similar occupations were more likely to identify with the target. Low self-esteem individuals, in contrast, did not show this effect; their occupational similarity to the target did not influence the extent to which they identified with the target.

Attainability Ratings. The attainability items were averaged into a single attainability index after first reversing the negative items (Cronbach's  $\alpha = .88$ ).

Attainability ratings were regressed on target type and self-esteem. As expected, there was a significant main effect of self-esteem,  $t(48) = 4.30, p < .0001$ ; high self-esteem participants rated the achievements of both targets as more attainable than did low self-esteem participants (see Figure 9). Neither the main effect of target type nor the target type by self-esteem interaction was significant, both  $ps > .20$ .

I expected that the perceived attainability of the target's achievements would mediate the effect of self-esteem on self-ratings in the overcame poor grades condition, in which the role model was relevant to both high and low self-esteem individuals; low self-esteem individuals would be negatively affected because they would see the target's achievements as unattainable, whereas high self-esteem individuals would be positively affected because they would see the target's achievements as attainable. To test whether perceived attainability mediated the effect of self-esteem on self-ratings, I conducted a series of regression analyses (Baron & Kenny, 1986). First, I regressed attainability ratings on self-esteem, and obtained a significant effect ( $\beta = .39, p = .05$ ). Second, I regressed self-ratings on self-esteem and obtained a significant effect ( $\beta = .607, p = .001$ ). Third, I regressed self-ratings on both attainability ratings and self-esteem. Attainability ratings had a significant effect on self-ratings ( $\beta = .375, p = .03$ ). The effect of self-esteem on self-ratings was also significant ( $\beta = .461, p = .01$ ), but the effect was less than when self-ratings were regressed on self-esteem alone. I then tested the indirect effect of self-esteem on self-ratings via attainability; the indirect path was marginally significant,  $z = 1.65, p = .10$ . Thus, there is tentative evidence that when participants were exposed to a target who had overcome poor grades, the impact of self-esteem on self-ratings was partially mediated by the perceived attainability of the target's achievements.

Next, I conducted a similar analysis for the no obstacles condition. Because this role model was relevant only to high self-esteem individuals, I expected that the evidence for mediation would be weaker in this condition. First, I regressed attainability ratings on self-esteem, and obtained a significant effect ( $\beta = .655, p < .001$ ). Second, I regressed self-ratings on self-esteem and obtained a significant effect ( $\beta = .846, p < .0001$ ). Third, I regressed self-ratings on both attainability ratings and self-esteem. The effect of attainability on self-ratings was not significant ( $\beta = -.132, p = .38$ ). Moreover, the effect of self-esteem on self-ratings was no less than when self-ratings were regressed on self-esteem alone, ( $\beta = .933, p < .001$ ). Thus, the conditions for mediation were not met; as expected, attainability did not mediate the effect of self-esteem on self-ratings in the no obstacles condition. This makes sense given that low self-esteem individuals did not perceive this target to be relevant: We would not expect their perceptions of the target's attainability to be related to their self-ratings.

If a role model is not perceived as relevant by all participants, as was the case with the no obstacles target, the relationship between the perceived attainability of the target's achievements and self-ratings should be weaker than it would be for a target who was perceived as more relevant. Accordingly, I conducted an additional set of analyses to show that the indirect path in the overcame poor grades condition differed significantly from the indirect path in the no obstacles condition. First, I assessed whether the path from self-esteem to the mediator, perceived attainability, differed between the two star target conditions. No difference was expected for this path: Self-esteem should be related to the perceived attainability of an outstanding other's achievements regardless of whether or not the other is relevant. To test this, I regressed perceived attainability on target type, self-esteem, and the target type by self-esteem interaction. The target type by self-esteem interaction term was not significant,  $t(47) = 1.30, p = .20$ , indicating that the path from self-esteem to perceived attainability did not differ between the two conditions. Next, I

assessed whether the path from the mediator, perceived attainability, to the criterion, self-ratings, differed between these two groups; this path was expected to be different for the two groups, because the perceived attainability of a target's achievements should only be related to self-ratings to the extent that the target is relevant. I regressed self-ratings on target type, self-esteem, perceived attainability, and the target type by perceived attainability interaction. The target type by perceived attainability interaction term was significant,  $t(46) = 2.08$ ,  $p = .04$ , indicating that the mediated effect of self-esteem on target type did indeed differ for the two target conditions. The beta ( $\beta = .375$ ) for this path in the overcame poor grades condition was greater than the beta ( $\beta = -.132$ ) for this path in the no obstacles condition. Thus, the indirect path for the overcame poor grades condition was indeed stronger.

Overall, these analyses are consistent with my hypothesis that the perceived attainability of a relevant role model's achievements will mediate the impact of self-esteem on self-ratings of success. Because they perceived the role model's achievements as out of their reach, low self-esteem individuals were negatively affected by the target. High self-esteem individuals, who perceived the target's achievements as possible for them, were positively affected. Because the no obstacles role model was not perceived as relevant by low self-esteem participants, and therefore did not affect their self-ratings, this pattern of mediation was absent in the no obstacles condition.

Positivity Ratings. The positivity items were averaged into a single attainability index after first reversing the negative items (Cronbach's  $\alpha = .71$ ). Positivity ratings were regressed on target type and self-esteem. There were no main effects or interactions, all  $ps > .30$ .

It could be argued that the impact of the targets on participants' self-perceptions was due, not to relevance, as I have suggested, but rather to differences in participants' liking for the target. For example, perhaps low self-esteem individuals like a target who has

overcome poor grades more than a target who has not overcome poor grades, and so are more strongly influenced by this individual. However, the lack of significant effects on the positivity measure suggests that this was not the case.

Inspiration Ratings. Inspiration ratings were regressed on target type and self-esteem. There was a significant main effect of self-esteem,  $t(48) = 2.06$ ,  $p = .04$ ; high self-esteem participants rated both targets as more inspirational than did low self-esteem participants. This is not surprising given that both targets had a more positive impact on high self-esteem participants than on low self-esteem participants.

However, this main effect was qualified by a significant target type by self-esteem interaction,  $F(1, 47) = 4.00$ ,  $p = .05$ . Low self-esteem participants exposed to the target who overcame poor grades did not differ significantly in their inspiration ratings from participants in the no obstacles condition,  $t(47) = 1.49$ ,  $p = .14$ . High self-esteem participants also rated the overcame poor grades target and the no obstacles target as about equally inspirational,  $t(47) = 1.22$ ,  $p = .23$  (see Figure 10). The main effect of target type was not significant,  $t(48) = .23$ ,  $p = .82$ .

In sum, for low self-esteem participants. I was successful in highlighting a structural pattern that made an otherwise irrelevant role model relevant. Low self-esteem individuals rated the target who had overcome poor grades, a problem that they themselves were facing, as more relevant for comparison purposes than the target who had not overcome poor grades. The pattern of surmounting a drop in grades made the otherwise irrelevant role model relevant. Indeed, low self-esteem participants identified more strongly with this individual than with the role model who did not share this life pattern with them. Unexpectedly, high self-esteem participants rated both targets as highly relevant in this study; it may be that a high degree of success is enough to make a target an inspiration to high self-esteem individuals, particularly if their own career type is similar to that of the target. Because high self-esteem individuals are more adept in the use of self-

serving biases, they may be able to construe a successful individual as a relevant comparison other even when the other is not particularly similar to them, superficially or structurally, in order to fulfill their self-enhancement goals (cf. Collins, 1996).

Alternatively, the target's outstanding success may itself provide structural similarity; high self-esteem individuals can identify with the target because they too are striving to reach the top of their careers.

I had predicted that the effect of the target on grade and class standing predictions would parallel the effects on self-ratings. This was not the case. The target who had overcome poor grades had no impact on grade predictions, and only marginal effects on predicted class standing. In contrast, the no obstacles target affected both grade and class standing predictions. Thus, my hypotheses regarding the effects of the structurally similar target on expectations for future academic success were not supported.

This study does provide support for the hypothesis that the effects of a relevant role model depend on self-esteem. Low self-esteem participants were negatively affected by the target that they rated as most relevant to them, the overcame poor grades target. In contrast, high self-esteem participants, who saw both targets as relevant, were positively affected by both.

Further, I found tentative evidence supporting my hypothesis that the effect of self-esteem on self-ratings is mediated by the perceived attainability of a relevant target's achievements. When attainability was controlled for, the impact of self-esteem on self-ratings was weaker. This is consistent with my hypothesis that individuals with low self-esteem were demoralized by the relevant target because they perceived this person's achievements as out of their reach, whereas high self-esteem individuals were inspired because they believed that they could attain success like that of the star target in the future.

## Study 2

In Study 1, participants were affected by a role model who had overcome problems that they themselves faced. However, the overcoming of career obstacles may itself be enough to render an irrelevant role model relevant, even if those obstacles do not correspond directly to problems that one will face oneself. For example, one may be inspired by the accomplishments of a wheelchair athlete who has achieved success despite a disability, or by a minority member who has overcome a "glass ceiling," even though one does not have to cope with the same physical or social challenges. Thus, it may be possible to form analogies based on more abstract structural similarities. I explored this possibility in Study 2.

Another aim of Study 2 was to rule out an alternative explanation for Study 1. In Study 1, the role model had overcome a problem that was personally relevant to participants, a drop in grades. It is possible, however, that the information about the target's grades increased participants' perceptions of superficial rather than structural similarity; for example, it may have made salient that the role model had also been a university student like themselves, thus increasing perceived surface similarity. In Study 2, I ruled out this possibility more decisively by using a manipulation in which increased structural similarity simultaneously reduced superficial similarity.

White university students read about a career-mismatched Black target who had overcome racial discrimination, or about a career mismatched White target who had not overcome such discrimination. Although the White participants would not expect to face racial discrimination in their own lives, I expected that the more general experience of overcoming career obstacles would be enough to make the otherwise irrelevant Black target relevant to them. Because the very obstacle that increased structural similarity, racial discrimination, actually emphasizes superficial dissimilarity, this also rules out the

possibility that participants are merely responding to matching on other attributes made salient by the kind of obstacle overcome.

I predicted that the White target would have no impact on either high or low self-esteem individuals. I expected that the impact of the Black target would be determined by self-esteem: Low self-esteem individuals, who would be less optimistic about their ability to overcome career obstacles, would be negatively affected by the target, whereas high self-esteem individuals, who have more favorable beliefs about their self-efficacy in overcoming difficulties, would be positively affected by this target.

### Method

Participants. Participants were 66 female and 41 male University of Waterloo undergraduates enrolled in Introductory Psychology who participated for course credit. Participants' gender had no effect on any of the variables and therefore is not discussed further. Three participants were removed from the analyses because they were non-White, and therefore may have seen the Black role model as relevant based solely on racial similarity. Four additional participants were excluded because they disbelieved the cover story. Altogether, 100 participants were included in the analyses.

Pretesting. At the beginning of the term, participants completed the Rosenberg Self-Esteem Scale (1965) as part of a larger pre-screening questionnaire.

Procedure. Three to 10 weeks after the prescreening, participants were invited to take part in a study on the impact of journalistic styles on social impressions.

In the White target condition, participants read about a White male architect who had achieved success in his field. The text of the article was the same as that used in Study 1, but a photograph was also included to indicate the target's race. In the Black target condition, participants read the same article, with a brief additional section indicating that the target had overcome racial discrimination in order to achieve success (i.e., "Unfortunately, there are still a lot of barriers to success for Black Canadians in

professional fields. Members of minorities still run up against discrimination when they are working in conservative professions. The fact that Jeffrey overcame such barriers makes this award even more special"). Again, a photograph was included to indicate the target's race. Three Black target and three White target photographs were used; the different photographs had no effect on subsequent analyses, and will therefore not be discussed further. The Black and White target articles are included in Appendix H.

No-target participants read a bogus newspaper article, ostensibly from a local community paper, about an animal recently acquired by the local zoo.

Dependent Measures. After reading the articles, participants in the Black and White target conditions rated the target and then themselves on the same success-related traits used in Study 1. Participants then completed the predicted grades, class standing, perceived relevance of target, and inspiration measures used in Study 1.

No-target control participants rated the animal they read about on 40 success-neutral adjectives (e.g., colorful, cute). They then rated themselves on the self-rating, and the grade and class standing prediction items.

## Results and Discussion

Ratings of Target. Success-related items were averaged into a single index of the target's success after first reversing the negative items (Cronbach's  $\alpha = .89$ ). A dummy coded vector was created to represent the two star target type (White and Black) conditions. Target ratings were regressed on target type and self-esteem. There were no main effects or interactions, all  $ps > .15$ . The target ratings were high ( $M = 9.86$ ), indicating that I was successful in portraying a role model with outstanding achievements.

Self-ratings. Self-ratings were averaged into an index of success as target ratings had been (Cronbach's  $\alpha = .87$ ). I created two dummy-coded vectors to represent the Black, White, and no-target conditions. I then regressed self-ratings on self-esteem and

target type. The regression analysis revealed a significant target type by self-esteem interaction,  $F(2, 96) = 5.30, p = .007$ .

Next, using a procedure described by West, Aiken, and Krull (1996), I tested for differences between the target groups at low (1 SD below the mean) and high (1 SD above the mean) levels of self-esteem. As expected, low and high self-esteem individuals responded differently to the Black target (see Figure 11). At low levels of self-esteem, participants exposed to the Black target rated themselves less positively than did participants exposed to the White target,  $t(94) = 2.34, p = .02$ , or those exposed to no target,  $t(94) = 2.08, p = .04$ . At high levels of self-esteem, participants exposed to the Black target rated themselves somewhat more positively than did those exposed to the White target,  $t(94) = 1.72, p = .09$ , or those exposed to no target,  $t(94) = 1.68, p = .09$ . Participants exposed to the White target rated themselves no differently from no-target controls at low,  $t(94) = .26, p = .80$ , or high,  $t(94) = .16, p = .87$ , levels of self-esteem.

In Study 1, high self-esteem participants exposed to a target who had not overcome obstacles were positively affected; here, high self-esteem individuals were unaffected by essentially the same target, the White architect. In Study 1, I surmised that some high self-esteem individuals may have been able to construe their occupations as similar to architecture, and so derive self-enhancement. As in Study 1, participants' occupation types were rated on a 3-point scale for similarity to architecture using the same similarity criteria. There was a significant difference between the mean similarity rating for participants in Study 1 ( $M = 1.95$ ) and participants in Study 2 ( $M = 1.53$ ),  $F(1, 140) = 10.68, p = .001$ . Thus, it may have been more difficult for high self-esteem participants in Study 2 to find parallels between themselves and the White target; consequently, the White target had no impact on them. However, because these similarity ratings are compared across studies, this conclusion remains tentative.

In sum, neither high nor low self-esteem individuals were affected by a career-mismatched White architect. In contrast, a Black architect had a negative impact on the self-ratings of low self-esteem individuals, but a positive impact on the self-ratings of high self-esteem individuals.

Grade Predictions. Predicted term grades were regressed on target type and self-esteem. The multiple regression analysis revealed a significant target type by self-esteem interaction,  $F(2, 96) = 3.28, p = .04$ . As expected, the impact of the target on grade predictions differed for high and low self-esteem individuals (see Figure 12). At low self-esteem levels (1 SD below the self-esteem mean), participants in the Black target condition predicted significantly lower averages than those in the no-target condition,  $t(94) = 2.93, p = .004$ ; however, they did not differ in their grade predictions from White target participants,  $t(94) = .88, p = .38$ . Unexpectedly, low self-esteem participants in the White target condition also predicted grades that were lower than those of no-target controls,  $t(94) = 2.11, p = .04$ . In contrast, at high levels of self-esteem (1 SD above the self-esteem mean), Black target participants did not differ in their grade predictions from no-target participants,  $t(94) = .59, p = .56$ , or White target participants,  $t(94) = .52, p = .60$ , and White target participants' grade predictions did not differ from no-target controls,  $t(94) = .02, p = .98$ .

Overall, the Black target had a negative impact on low self-esteem participants' grade predictions. Unexpectedly, the White target also had this negative impact on low self-esteem individuals. Neither target had an impact on the grade predictions of high self-esteem individuals. These results are somewhat problematic, given that I had expected the Black to have an effect on both high and low self-esteem participants, and the White to have no impact on either high or low self-esteem participants.

Class Standing Predictions. Predicted class standing scores were regressed on target type and self-esteem. The regression analysis revealed a target type by self-esteem

interaction for predicted class standing,  $F(2, 90) = 3.45, p = .04$ . High and low self-esteem participants differed in their responses to the targets (see Figure 13). At low self-esteem levels, Black target participants did not differ in their class standing predictions from no-target participants,  $t(90) = 1.11, p = .27$ , or White target participants,  $t(90) = .71, p = .48$ . Unexpectedly, low self-esteem White target participants predicted a marginally poorer standing than did no-target participants,  $t(90) = 1.85, p = .07$ . At high self-esteem levels, Black target participants predicted a more positive class standing than did no-target participants,  $t(90) = 2.40, p = .02$ , but did not differ from White target participants,  $t(90) = 1.26, p = .21$ . The class standing predictions of White target participants did not differ from those of no-target controls,  $t(90) = .97, p = .34$ .

In sum, the Black target had no impact on the class standing predictions of low self-esteem participants; unexpectedly, as was the case with grade predictions, the White target had a negative impact on predictions. As expected, among high self-esteem individuals, the Black target boosted class standing predictions, whereas the White target no impact.

Relevance Ratings. Relevance ratings were regressed on target type and self-esteem. I expected participants to rate the target who had overcome a career obstacle, the Black, as more relevant than the target who had not overcome an obstacle, the White; however, this main effect was not significant,  $t(60) = 1.33, p = .19$  (see Figure 14). Neither the self-esteem by target type interaction nor the main effect of self-esteem was significant, both  $ps > .10$ .

Given the salient racial dissimilarity between the White participants and the Black target, it is striking that the Black target was not rated as any less relevant than the White target. It is possible that participants rated the Black target as somewhat more relevant than they might otherwise have done due to self-presentational concerns. Participants may have wished to avoid the appearance of being racially prejudiced, and so rated the Black target as more relevant than they actually perceived him to be. However, if the relevance of the

target was influenced only by such considerations, we would expect the Black and White targets to have a similar impact on participants' self-perceptions. This was not the case: The Black target had a greater impact than the White target on the self-perceptions of both high and low self-esteem individuals, suggesting that the Black target was indeed a more relevant comparison other for participants.

Explanations. Participants also explained their responses to the relevance question in open-ended form. Two judges unaware of participants' experimental condition and self-esteem score coded the explanations of participants in the Black and White target groups. Responses were coded for any mention of dissimilarities between participants and the target using the same criteria as in Study 1. Responses of participants in the Black target group were also coded for any indication that the target had overcome an obstacle in order to achieve success. Because participants at higher and lower levels of self-esteem differed in their responses to the targets, I also examined self-esteem differences on these open-ended measures. Participants were divided into high and low self-esteem groups based on a median split.

Agreement between the two judges for the dissimilarity coding was 89%; discrepancies were resolved through discussion. Low (88%) and high (64%) self-esteem participants exposed to the White target did not differ significantly in the number of dissimilarities they mentioned,  $z = 1.53$ ,  $p = .12$  (see Table 2). This contrasts with the findings in Study 1, in which low self-esteem participants were more likely than high self-esteem participants to note dissimilarities between themselves and a target who had not overcome an obstacle. Again, because fewer participants in Study 2 were in occupations that shared features with architecture, high self-esteem participants may have been less likely to construe the successful other as similar to themselves.

Low (57%) and high (50%) self-esteem participants exposed to the Black target also did not differ in the number of dissimilarities mentioned,  $z = .40$ ,  $p = .68$ .

Accordingly, mentions of dissimilarity were collapsed across self-esteem. Participants exposed to the White target (77%) were significantly more likely to indicate that they were dissimilar to the target than were participants exposed to the Black target (65%),  $z = 2.02$ ,  $p = .04$ . This is consistent with the finding that both high and low self-esteem participants were more strongly affected by the Black target than the White target.

It is remarkable that participants cited more differences between themselves and a White target than a Black target, from whom they differed on the highly obvious attribute of race. Despite that fact that the Black was more superficially different, participants nevertheless perceived him to be a relevant comparison other.

The second class of responses we coded for, indications that the Black target had overcome an obstacle, sheds further light on participants' reactions to this target. Agreement between the coders was 98% on this measure. 28% of participants made some mention of the fact that the target had overcome a barrier in order to achieve success. As in Study 1, participants provided vivid examples of the analogies they were able to form between themselves and this target. As one participant noted,

This person has had to work very hard to achieve all that he has so far....He has had to knock down personal barriers that he had no hand in creating. I as well have to break down a personal barrier in order to reach my full potential. Walker is a great example of how hard work pays off in the end, as well as how well rounded people can be if they want to be.

This student was clearly able to see a pattern in the target's life that related to one in his own. Accordingly, the student could use the target's achievements to glean information about his own prospects: If one works hard to overcome difficulties, one will eventually succeed.

In some cases, even when participants explicitly recognized the difference between their own interests or experiences and those of the target, they could identify with his experience of surmounting difficulties in life. As another participant commented,

Jeffrey Walker is a very successful individual who seems to excel in his career. I feel that he has overcome many barriers to reach his present position. Jeffrey Walker could be a role model for young people, African Americans, people interested in architecture. Although I cannot relate to Jeffrey in several areas, I think that he still offers me an indication of how hard work can pay off.

The target's experiences in working hard to overcome problems provided this participant with a template to guide his own efforts to achieve success despite other dissimilarities. Thus, a star other who has overcome obstacles in order to achieve success can be a relevant role model even to those individuals who seek success in a different domain.

As in Study 1, low self-esteem participants (50%) were more likely to note that the target had overcome an obstacle than were high self-esteem participants (11%),  $z = 2.32$ ,  $p = .02$  (see Table 2). Again, it is possible that low self-esteem individuals, who believe that many difficulties lie between them and success, are more likely to identify with a role model who has himself or herself overcome some obstacle before achieving success. Nevertheless, even when provided with the example of a role model who has surmounted a problem, low self-esteem individuals may still lack the confidence to believe that they too will be able to overcome such adversity; accordingly, the effect of this relevant role model is negative.

Inspiration Ratings. Inspiration ratings were regressed on target type and self-esteem. The target type by self-esteem interaction was not significant,  $F < 1$ . However, there was a significant main effect of self-esteem,  $t(60) = 2.85$ ,  $p = .006$  (see Figure 15);

participants with higher self-esteem rated the targets as more inspirational than did participants with lower self-esteem. This is not surprising, given my theory regarding attainability: Low self-esteem individuals, for whom the targets' success seems less attainable, should feel less inspired and more demoralized by high achievers than high self-esteem participants, for whom comparable success seems attainable.

In addition, participants rated the target who had overcome an obstacle, the Black, as more inspirational than the target who had not overcome an obstacle, the White, as revealed by a marginally significant main effect of target type,  $t(60) = 1.72, p = .09$ . This effect is somewhat surprising for low self-esteem participants, who were actually negatively affected by the Black target. It may be that participants were influenced by a cultural cliché that people who overcome adversity are inspirational. Individuals who have to endure some kind of misfortune or affliction in their quest for success, like the figure skater who wins a medal despite a painful injury, are typically seen as heroes. Their stellar example is expected to inspire those around them. Thus, even when the impact of such a role model is negative, individuals may nonetheless believe that they have been inspired.

In sum, despite the differences in occupation type, race, age, and, in the case of female participants, gender, the Black target tended to be perceived as a more relevant and less dissimilar role model than the White target. The surface attribute dissimilarities between participants and the Black target were superseded by a deeper, structural similarity: the overcoming of a career obstacle. Although they would not themselves have to face the same obstacle, racial discrimination, participants could identify with the more abstract pattern of surmounting difficulties in one's occupation in order to achieve success. Participants were thus able to form an analogy between themselves and the Black target based on this deep similarity; as a result, the Black target influenced their self-perceptions. In contrast, the career mismatched White target was low in both superficial and structural

similarity to participants. Because there was no basis on which participants could form an analogy between themselves and the White target, their self-perceptions were unaffected.

I had predicted that the targets' effects on grade predictions and class standing would parallel those for self-ratings. As expected, the Black target had a negative effect on the grade predictions of low self-esteem individuals; however, the White target had a similarly negative impact. Neither target had an impact on the grade predictions of high self-esteem individuals. As predicted, the Black target had a positive impact on high self-esteem participants' class standing predictions, but the White target had no impact. However, contrary to predictions, only the White target had a negative impact on the class standing predictions of low self-esteem participants; the Black target had no impact. Thus, my hypotheses on the measures of predicted academic success were only partially supported.

As in Study 1, the direction of the relevant role model's impact was determined by participants' self-esteem. The Black target had a negative impact on low self-esteem individuals. They could relate to the pattern of overcoming obstacles in one's life; however, because low self-esteem individuals have low expectations about their own ability to overcome obstacles, their self-evaluations of success dropped. High self-esteem individuals also identified with the pattern of overcoming career obstacles: however, because they have more optimistic expectations about their own abilities to overcome such problems, the impact of the Black target was positive: Their self-evaluations were boosted.

## General Discussion

When participants perceived structural similarities between themselves and a superficially dissimilar role model, the role model was seen as relevant. The impact of the relevant role model was determined by self-esteem; low self-esteem individuals were negatively affected, and high self-esteem individuals were positively affected by the star.

Low self-esteem participants in Study 1, and both high and low self-esteem participants in Study 2 perceived a role model who had overcome an obstacle as more relevant than a role model who had not. In both studies, participants were able to form an analogy between themselves and the superficially dissimilar other when this structural similarity was introduced. In Study 1, the obstacle was one that participants themselves were experiencing: a drop in grades. In Study 2, participants identified with the role model at a more abstract level; although they would not face the same obstacle, racial discrimination, in their own lives, they could identify more generally with the problem of coping with obstacles on the road to career success. Thus, by highlighting an underlying pattern that participants shared with a superficially dissimilar role model, I made an otherwise irrelevant role model appear relevant; the salience of deep structural similarities overcame surface dissimilarities.

In Study 2, I expected that participants would rate the Black target as more relevant than the White target; however, this effect did not reach significance. It may be that salient surface similarities (or dissimilarities) are important in peoples' conscious perceptions of a role model's relevance; given the obvious racial dissimilarity with the Black target, participants may have underestimated the influence of more subtle structural similarities in their self-reported relevance ratings. Individuals are not necessarily aware of the cognitive processes underlying their behaviors (Nisbett & Wilson, 1977); thus, their theories regarding what makes a role model relevant may have influenced their self-reported responses more than the actual impact that the role model had on them. Indeed, the actual

pattern of self-rating effects indicates that the target who was expected to be perceived as more relevant, the Black architect, did indeed have a greater impact on participants.

Unexpectedly, in Study 1, high self-esteem individuals found a career mismatched role model who had not overcome an obstacle to be relevant, and were positively affected by this target. This pattern of relevance results suggests that self-esteem may affect the determination of what makes a role model relevant. Researchers in the area of cognitive science have proposed that analogical mappings may be guided not only by similarities and structural parallels between the elements, but also by the goals of the individual making the analogy (Holyoak & Thagard, 1997). Individuals will choose mappings among elements that help them achieve these goals. If the goal of high self-esteem individuals is to self-enhance (Baumeister, Tice, & Hutton, 1989), then they may seek to emphasize a mapping between themselves and a superior other that accomplishes this purpose. Thus, high self-esteem individuals may have been motivated to draw analogies with the superficially dissimilar other based on more general patterns of career success; they believed that, like the role model, they could rise to the top of their own professions. This analogical reasoning may have been facilitated by the fact that a high percentage of subjects in Study 1 were planning to pursue white collar, high-paying occupations, such as accounting, medicine, and law, that, like architecture, involve specialized academic training, some form of internship, and membership in professional associations. In Study 2, in which fewer participants were in programs that shared such similarities with architecture, it may have been more difficult for high self-esteem participants to construe the target as similar to themselves. Thus, in Study 2, the target was only perceived as relevant when he had overcome an obstacle.

In addition, there is some evidence to suggest that low self-esteem individuals may find a role model who has overcome adversity to be particularly relevant to them. Low self-esteem individuals were significantly more likely to mention that the role model had

faced an obstacle in their open-ended explanations of the target's relevance than were high self-esteem individuals. Low self-esteem individuals may be more concerned about the problems they are facing and will face in the future than are high self-esteem individuals. Accordingly, for low self-esteem individuals, a successful other who also faced such difficulties may be especially relevant. This is not to say that high self-esteem individuals will not also find such a role model relevant; indeed, high self-esteem individuals' self-perceptions were also affected by the targets who had overcome obstacles. Nevertheless, whereas high self-esteem individuals may form an analogy with the target based on the success that the target achieved after overcoming an obstacle, low self-esteem individuals may be more inclined to draw the analogy based on the experience of overcoming an obstacle itself. Individuals process information about other individuals according to what traits or features are important to their own self-perceptions (Fong & Markus, 1982). Thus, the structural similarities that high and low self-esteem individuals perceive themselves to share with a role model may depend to some extent on their own self-schemas. Different individuals will zero in on different aspects of the same role model, and so may differ in the extent to which they perceive the role model to be relevant.

When a role model was perceived as relevant, self-esteem determined the direction of the role model's impact on the self. In both studies, a relevant role model demoralized low self-esteem individuals; their self-evaluations were less positive, and they tended to predict poorer future academic performance. In contrast, relevant role models had a positive impact on high self-esteem individuals; they rated themselves more positively, and predicted greater future academic success for themselves after exposure to a relevant star.

Thus, there appears to be a complex interplay between self-esteem and relevance judgments in social comparisons to role models. First, self-esteem may influence the kinds of structural similarities that individuals perceive themselves to share with a role model.

Second, to the extent that a role model is perceived as relevant, self-esteem will determine whether the outcome of the comparison is positive or negative.

Why might high and low self-esteem individuals differ in their self-evaluative responses to a relevant star? In previous research, we found that individuals must be able to imagine a self as spectacular as the star if they are to experience inspiration. Individuals who were unable to imagine a comparably successful self were demoralized (Lockwood & Kunda, 1997; Lockwood & Kunda, in press). In the present studies, I used self-esteem as a proxy for the perceived attainability of a star's success. I reasoned that low self-esteem individuals, who have lower expectations about their abilities and set lower goals for themselves, will see a star's achievements as out of their reach. High self-esteem individuals, who have more optimistic expectations about their abilities, will see a star's achievements as attainable. Study 1 provides tentative evidence to support this view: Low self-esteem individuals did indeed rate the star targets' achievements as less attainable than did high self-esteem individuals. In fact, attainability appeared to partially mediate the effect of self-esteem on participants' self-perceptions following their exposure to a relevant star. Because they were unable to imagine a self as successful as the star, low self-esteem individuals were demoralized; they contrasted their own relatively mediocre past and potential achievements with those of the star, and felt inferior. High self-esteem individuals, on the other hand, were able to imagine a self as successful as the star, and thus felt inspired by the comparison.

Nevertheless, in cases in which a role model's achievements appear out of reach to high self-esteem individuals, they should be discouraged by the comparison. Indeed, in previous research, we found that high self-esteem individuals were demoralized in circumstances under which they likely believed that they should already have accomplished a similar level of success, as when the star other was a peer (Lockwood & Kunda, in press). Moreover, it is also possible that when the success of a role model is less

dauntingly spectacular, even low self-esteem individuals may be able to draw inspiration from the star. Previous studies have yielded conflicting findings regarding the role of self-esteem in upward comparison outcomes (for a review, see Wood & Lockwood, in press). By demonstrating a link between self-esteem and attainability, these studies provide an important clarification of this issue. In the future, it would be useful to show within a single study that high self-esteem individuals will respond positively to a star who is more advanced in his or her career, but negatively to a star who is a peer.

Interestingly, in Study 2, both high and low self-esteem participants perceived the more relevant role model to be inspiring regardless of whether the actual impact of the role model was positive or negative. High self-esteem participants, who were positively affected, did indeed rate the role models as more inspiring than did low self-esteem individuals, who were negatively affected. Nevertheless, low self-esteem individuals indicated that they were more inspired by a role model who had overcome an obstacle than by a role model who had not; this is surprising, given that low self-esteem participants were actually negatively affected by the target who had overcome obstacles. It may be that participants were unaware of the effect of the role model on their self-perceptions (Nisbett & Wilson, 1977), and were instead influenced by a common theory regarding individuals who overcome difficulties. Individuals who have triumphed over adversity are typically seen as heroes; they are expected to motivate and inspire those around them. Thus, even when the impact of such a role model is negative, individuals may nonetheless perceive this individual to be at least somewhat inspiring.

Overall, this research provides an important clarification of the process by which individuals who excel in domains outside one's own area of expertise can affect one's self-perceptions. In his SEM model, Tesser (1988) argues that individuals can derive benefits from a close others who excel in a nonrelevant domain by "basking in the reflected glory" of the close other's success. It could be argued that, in these studies, I have not

demonstrated that individuals have used analogy to make social comparisons, but have merely provided another example of reflection. However, if participants were only experiencing reflection, we would not expect their perceptions of their own specific skills and abilities to be affected by the star other; a doctor basking in the reflected glory of her musician brother's success can feel pleased and proud, but this should not affect her perception of her own competence as a doctor. Thus, if participants were experiencing only reflection, we might expect their global self-esteem to be somewhat higher because their status has been enhanced by their close association with a successful other; however, we would not expect, as was the case in these studies, that individuals would perceive themselves to be any more or less competent in their own fields. Moreover, the reflection process cannot account for the negative effect on low self-esteem individuals in these studies. This suggests that the effect of the role model on participants in these studies is due not to reflection, but to social comparison based on analogical reasoning.

Analogical thinking may be important not only in social comparison, but also in other processes that people use to establish coherence in their social world (cf. Kunda & Thagard, in press). In social comparisons, individuals attempt to make sense of themselves by mapping themselves onto a source individual. To the extent that they can perceive similarities or parallel structures between themselves and the other, they can use what they know about the comparison other to draw inferences about themselves. Similarly, people may attempt to make sense of other individuals by using themselves as a source of information; they map another individual onto the self, drawing inferences about the other person's behavior or attitudes by assuming that the other is similar to them. One may, for example, make inferences about a friend's career goals based on what one's own goals are. Analogical thinking may also be involved when people use what they know about a well-known other to make inferences about another less well-known individual. For example, in one study, people incorrectly remembered individuals who resembled a

significant other (such as a parent or close friend) in one domain as resembling the significant other in additional domains (Andersen, Glassmann, Chen, & Cole, 1995). Thus, people can use analogies to establish coherence in their social environment in a variety of different ways: They may map the self onto another individual, another individual onto the self, or one individual onto another. Our future understanding of such phenomena may be enriched by exploring how analogical reasoning is applied in these processes.

This research has important practical as well as theoretical implications regarding the potential effects of role models on their target audiences. Previous research has stressed the need for matching comparison others on such features as age, race, and gender (cf. Wood, 1989). Moreover, it is a cultural cliché that such role models will be inspirational, that their superlative accomplishments will encourage those around them to strive for a similar degree of excellence. This research indicates that people's responses to role models are actually more complex than has previously been assumed. Although matching on surface attributes may be important, these studies suggest that it may not always be crucial. Superficially dissimilar role models may be perceived as relevant comparison others if they share deeper patterns of relationships with an individual. People who are different from us on surface attributes may nevertheless share similar goals and life experiences, and so can provide us with important information about our own lives. Moreover, this research indicates that the effects of such relevant others will not always be beneficial. Role models may actually have a damaging effect on at least some members of their audience. Indeed, those individuals who may need a boost to their self-perceptions the most, those with low self-esteem, may feel demoralized after exposure to a superior other. Only those individuals whose self-perceptions are already positive will stand to benefit from exposure to a star.

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Table 1

Study 1: Coding of High and Low Self-Esteem Participants' Open-Ended Responses

Regarding Target's Relevance

	No Obstacles Target		Overcame Poor Grades Target	
	Low Self-Esteem n = 15	High Self-Esteem n = 10	Low Self-Esteem n = 11	High Self-Esteem n = 15
Noted differences between self and target	73	30	36	40
Noted that target overcame poor grades	--	--	64	20

Note. The values represent percentages of participants classified as noting one of the coded-for responses.

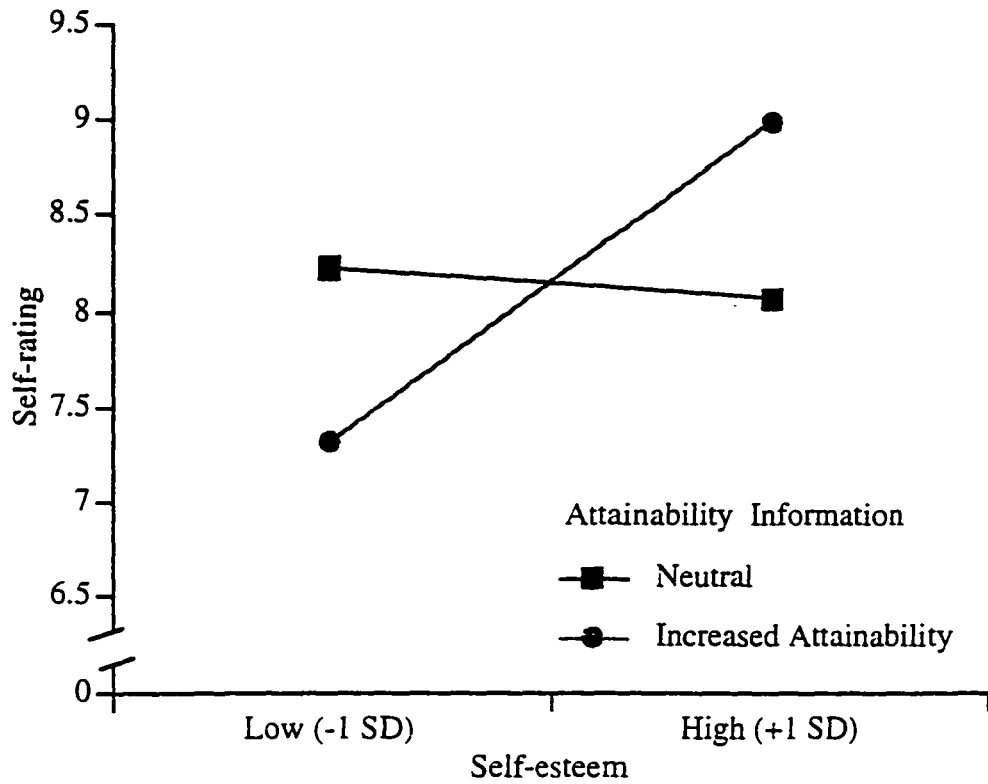
Table 2

Study 2: Coding of High and Low Self-Esteem Participants' Open-Ended Responses

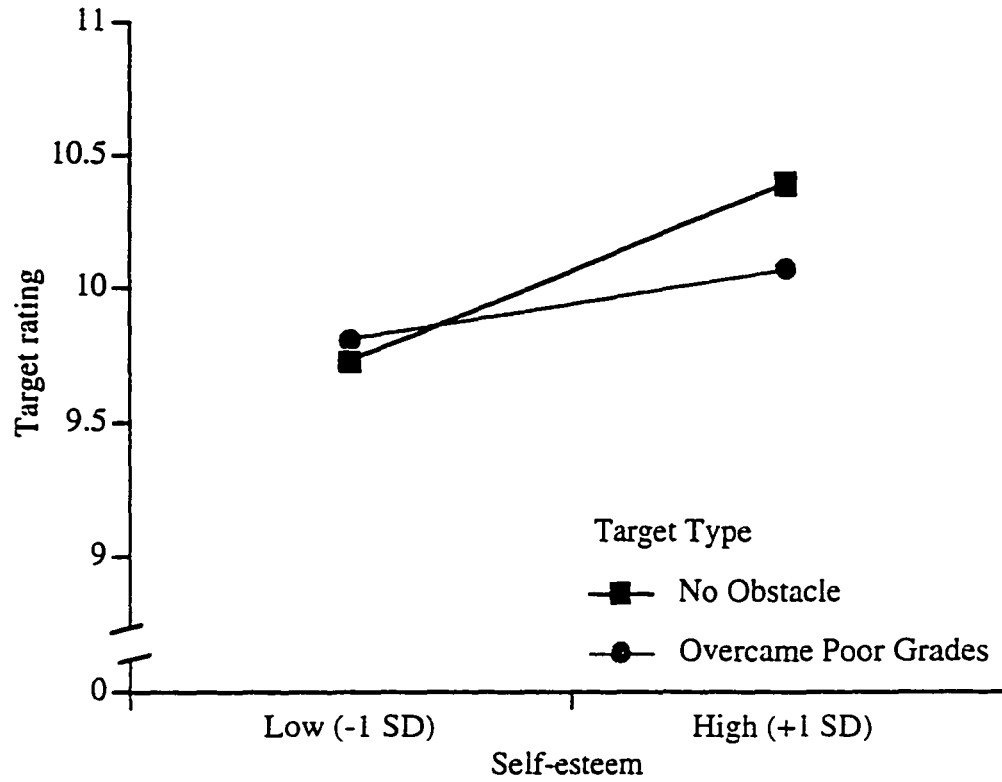
Regarding Target's Relevance

	White Target		Black Target	
	Low Self-Esteem n = 17	High Self-Esteem n = 14	Low Self-Esteem n = 14	High Self-Esteem n = 18
Noted differences between self and target	88	64	57	50
Noted that target overcame an obstacle	--	--	50	11

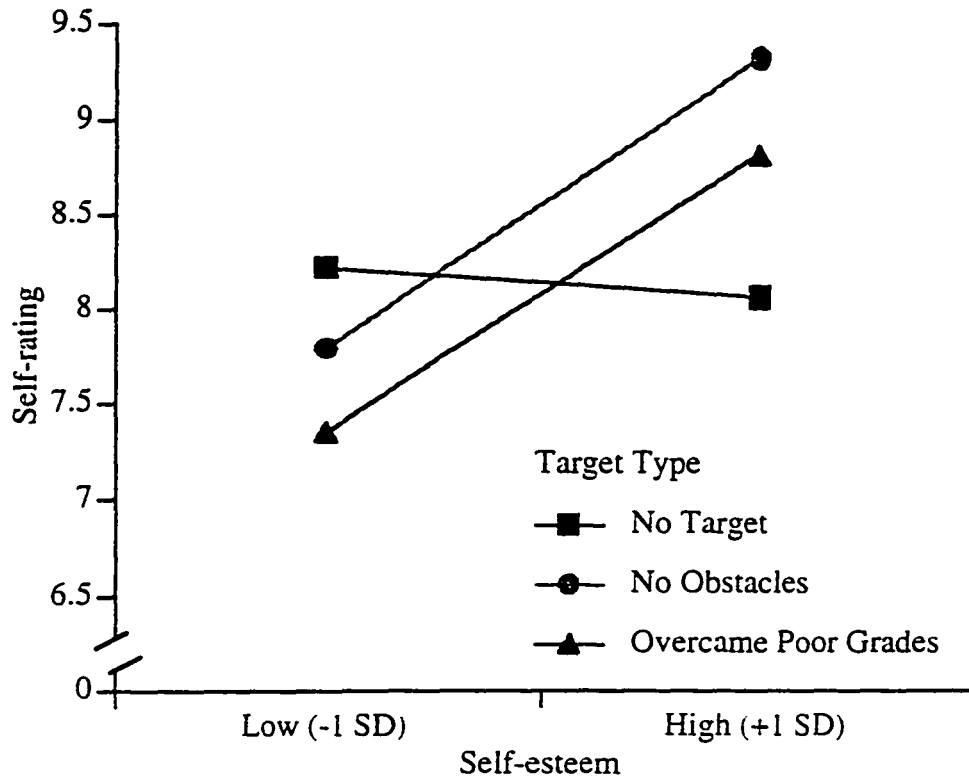
Note. The values represent percentages of participants classified as noting one of the coded-for responses.



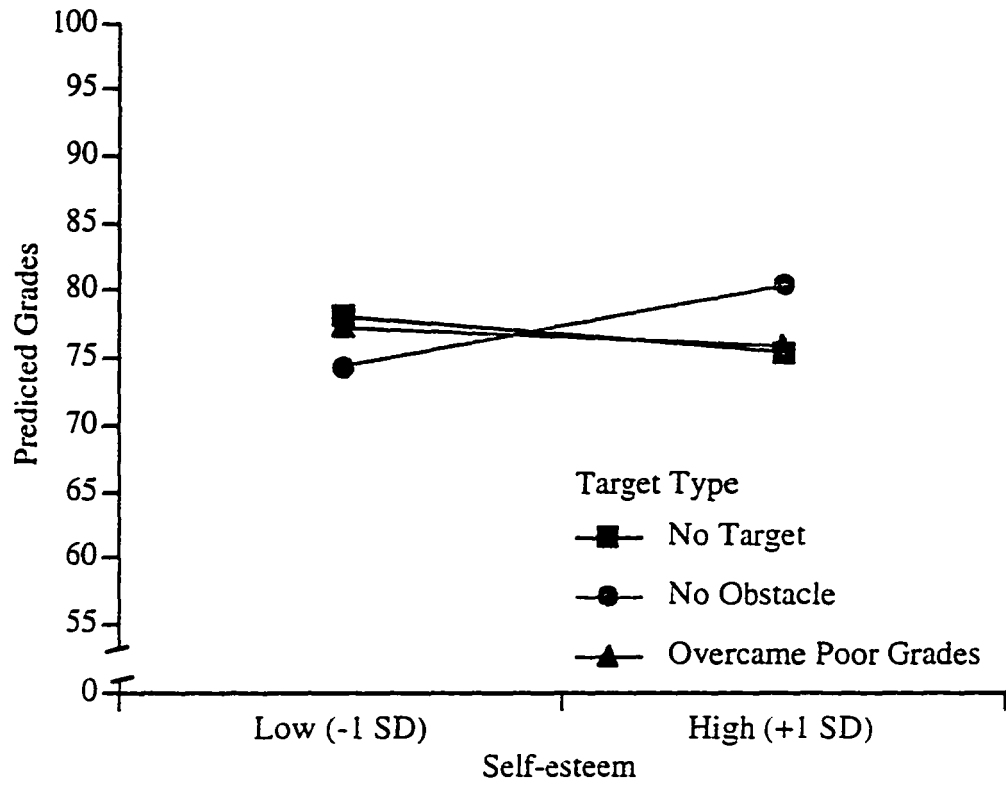
**Figure 1.** Study 1: Simple Regression Lines Depicting the Relationship Between Self-Esteem and Self-Ratings for No-Target Control Groups in the Neutral and Increased Attainability Conditions, Plotted at 1 SD Below and 1 SD Above the Self-Esteem Mean.



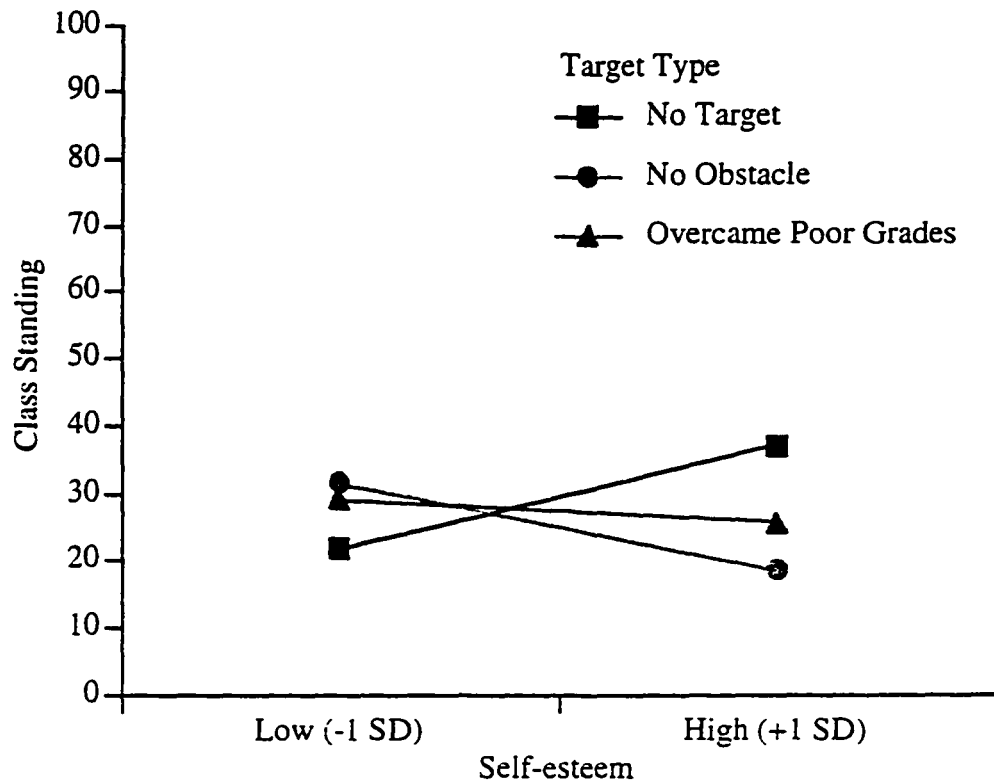
**Figure 2.** Study 1: Simple Regression Lines Depicting the Relationship Between Self-Esteem and Target Ratings for the No Obstacles and Overcame Poor Grades Groups, Plotted at 1 SD Below and 1 SD Above the Self-Esteem Mean.



**Figure 3.** Study 1: Simple Regression Lines Depicting the Relationship Between Self-Esteem and Self-Ratings for Each Target Group, Plotted at 1 SD Below and 1 SD Above the Self-Esteem Mean.

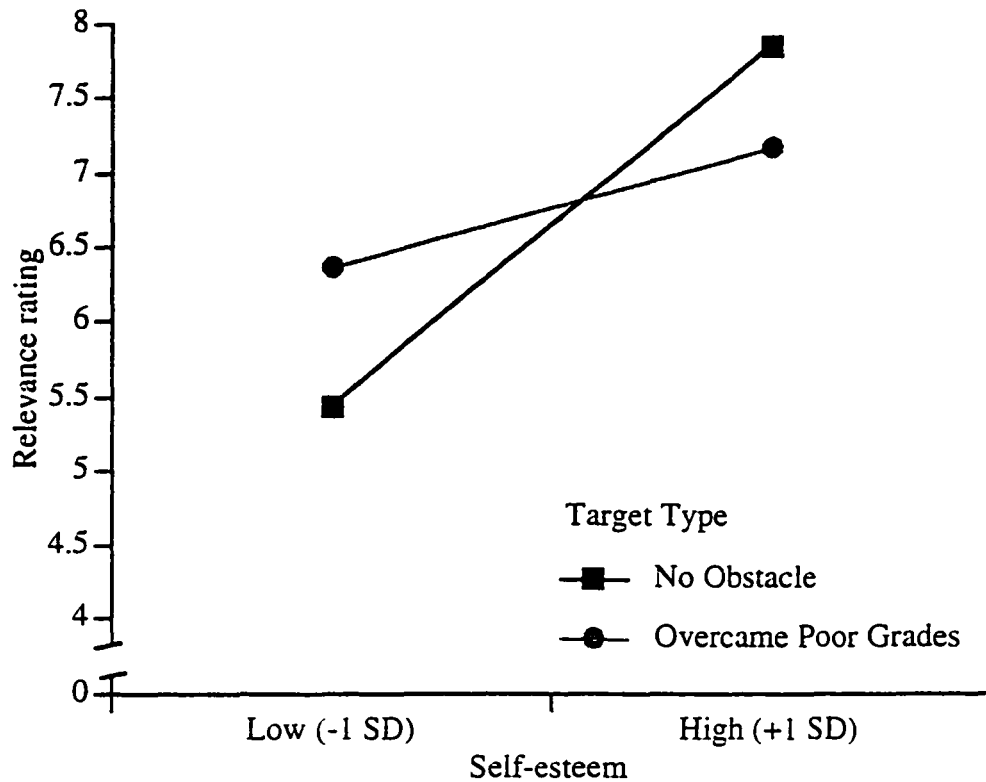


**Figure 4.** Study 1: Simple Regression Lines Depicting the Relationship Between Self-Esteem and Grade Predictions for Each Target Group, Plotted at 1 SD Below and 1 SD Above the Self-Esteem Mean.



Note: Lower numbers indicate more positive class standing

Figure 5. Study 1: Simple Regression Lines Depicting the Relationship Between Self-Esteem and Class Standing Predictions for Each Target Group, Plotted at 1 SD Below and 1 SD Above the Self-Esteem Mean.



**Figure 6.** Study 1: Simple Regression Lines Depicting the Relationship Between Self-Esteem and Relevance Ratings for the No Obstacles and Overcame Poor Grades Groups, Plotted at 1 SD Below and 1 SD Above the Self-Esteem Mean.

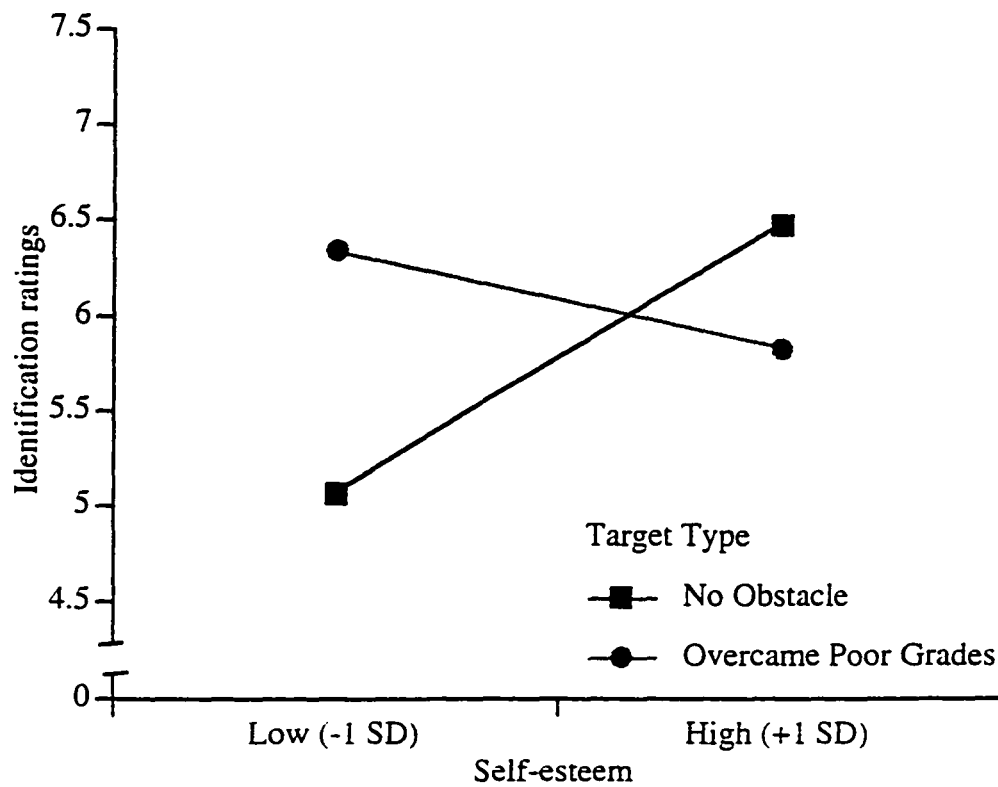
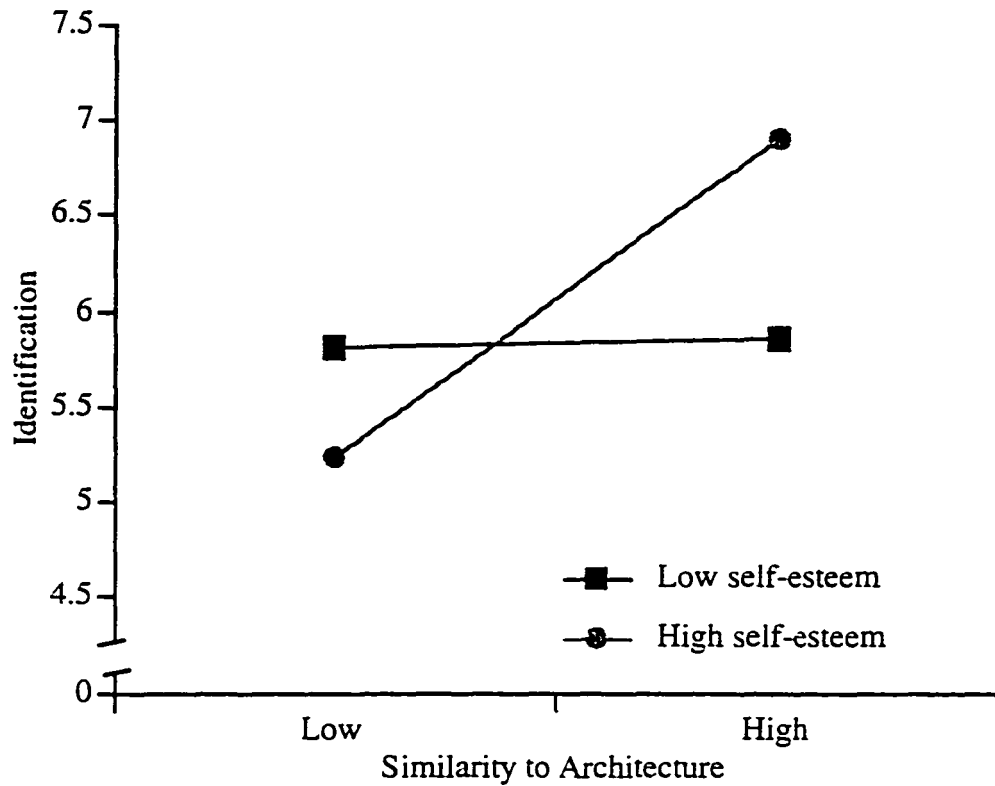
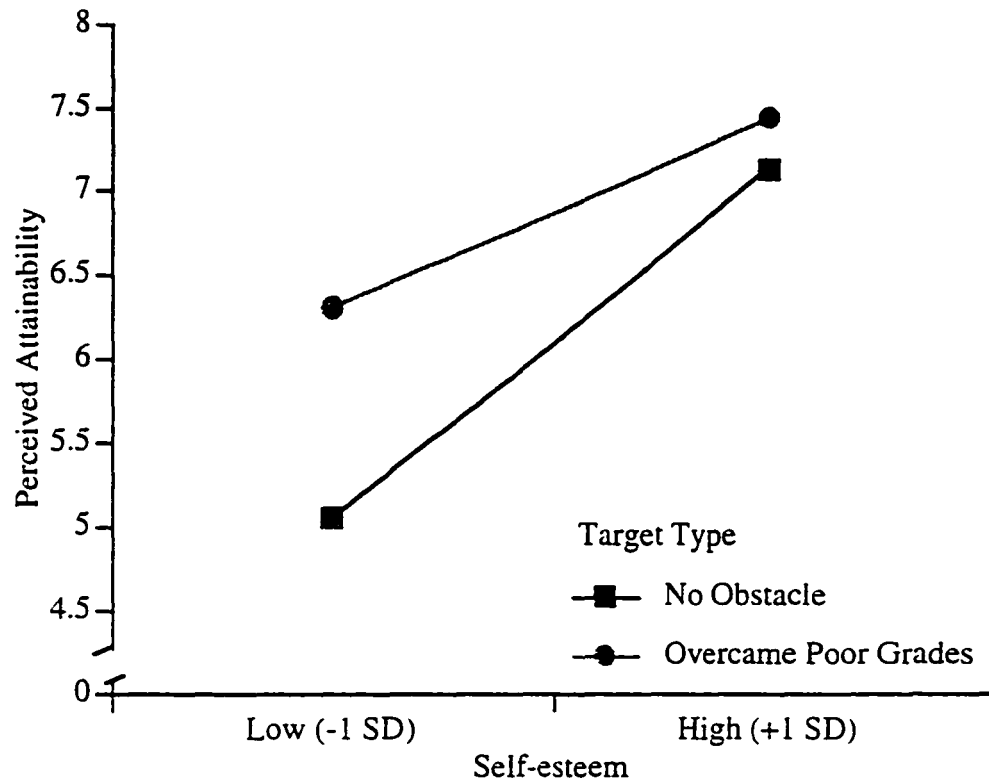


Figure 7. Study 1: Simple Regression Lines Depicting the Relationship Between Self-Esteem and Identification Ratings for the No Obstacles and Overcame Poor Grades Groups, Plotted at 1 SD Below and 1 SD Above the Self-Esteem Mean.



**Figure 8.** Study 1: Simple Regression Lines Depicting the Relationship Between Similarity and Identification Ratings at Specified Values of Self-Esteem for the No Obstacles and Overcame Poor Grades Groups. The Lines Were Plotted at 1 SD Below and 1 SD Above the Similarity Mean.



**Figure 9.** Study 1: Simple Regression Lines Depicting the Relationship Between Self-Esteem and Attainability Ratings for the No Obstacles and Overcame Poor Grades Groups, Plotted at 1 SD Below and 1 SD Above the Self-Esteem Mean.

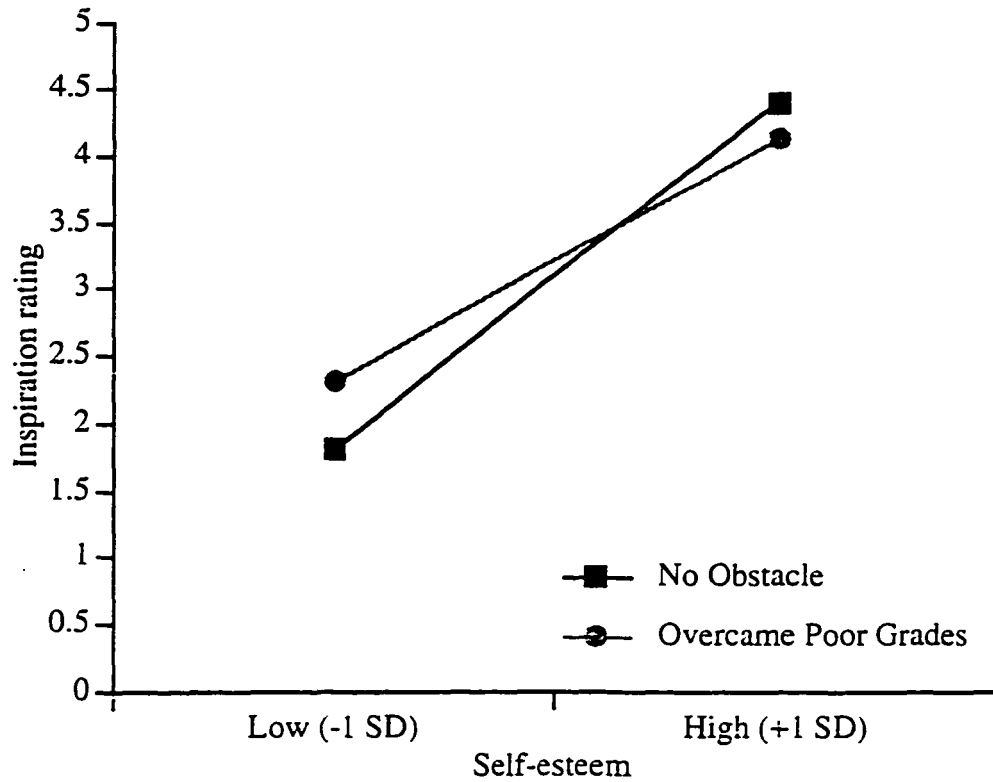


Figure 10. Study 1: Simple Regression Lines Depicting the Relationship Between Self-Esteem and Inspiration Ratings for the No Obstacles and Overcame Poor Grades Groups, Plotted at 1 SD Below and 1 SD Above the Self-Esteem Mean.

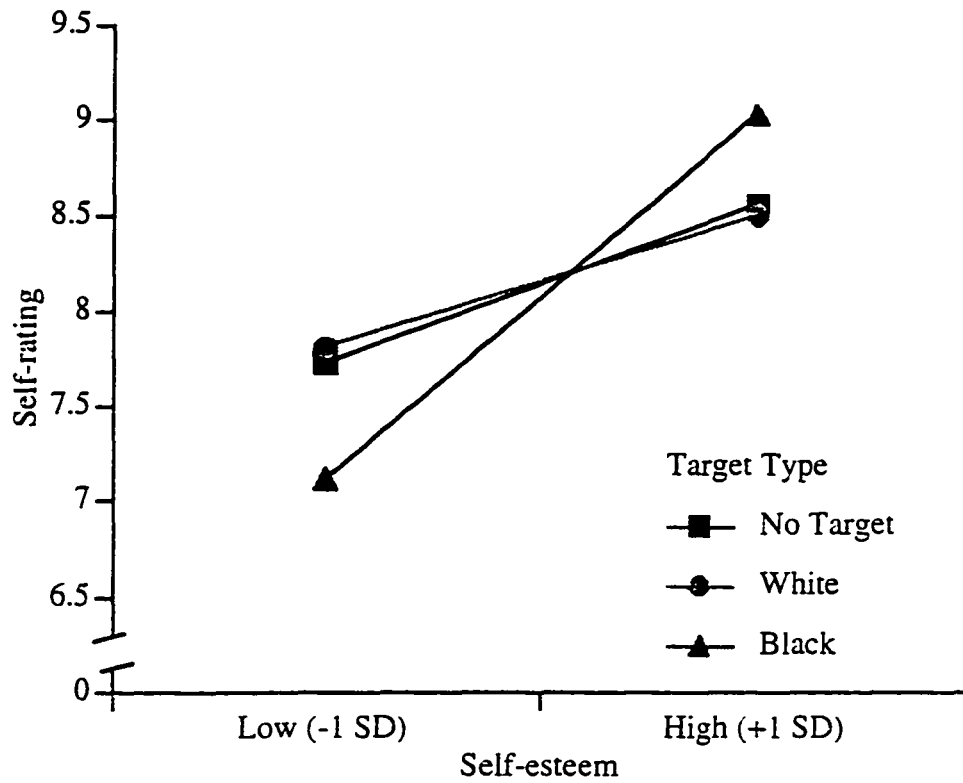
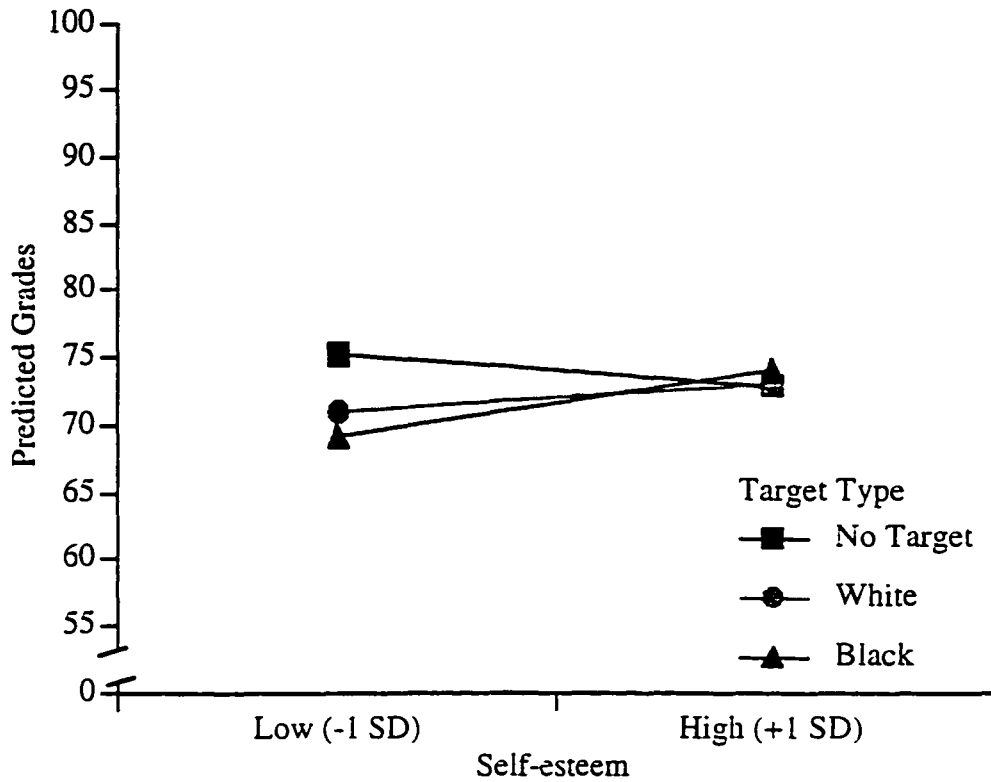
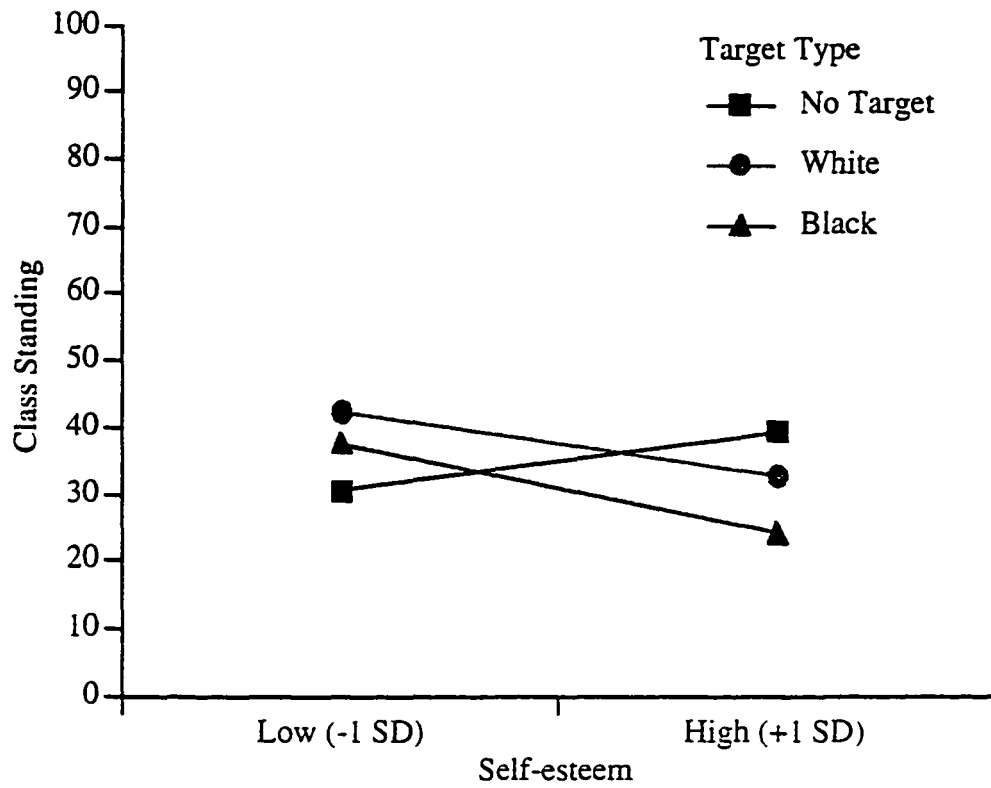


Figure 11. Study 2: Simple Regression Lines Depicting the Relationship Between Self-Esteem and Self-Ratings for Each Target Group, Plotted at 1 SD Below and 1 SD Above the Self-Esteem Mean.

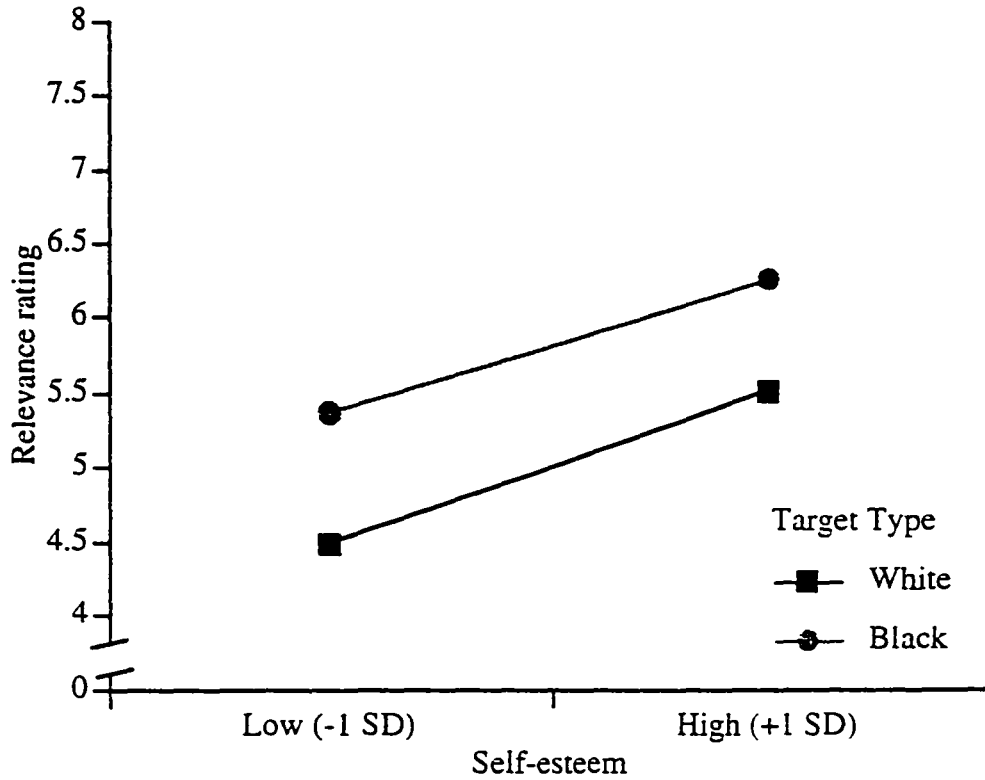


**Figure 12.** Study 2: Simple Regression Lines Depicting the Relationship Between Self-Esteem and Predicted Grades for Each Target Group, Plotted at 1 SD Below and 1 SD Above the Self-Esteem Mean.



Note: Lower numbers indicate more positive class standing

Figure 13. Study 2: Simple Regression Lines Depicting the Relationship Between Self-Esteem and Predicted Class Standing for Each Target Group, Plotted at 1 SD Below and 1 SD Above the Self-Esteem Mean.



**Figure 14.** Study 2: Simple Regression Lines Depicting the Relationship Between Self-Esteem and Relevance Ratings for the White and Black Target Groups, Plotted at 1 SD Below and 1 SD Above the Self-Esteem Mean.

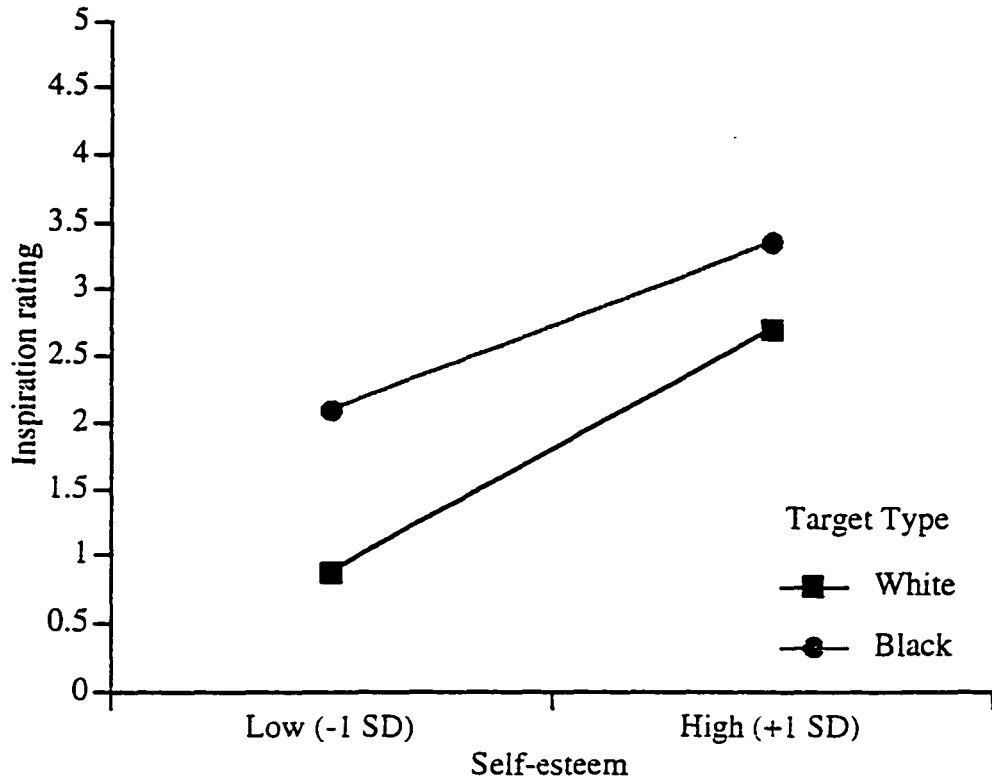


Figure 15. Study 2: Simple Regression Lines Depicting the Relationship Between Self-Esteem and Inspiration Ratings for the White and Black Target Groups, Plotted at 1 SD Below and 1 SD Above the Self-Esteem Mean.

## Appendix A

### Study 1: Attainability Manipulation Materials

## New tool to monitor visual cortex

What happens to our brain when we look at the things we see around us everyday?

Scientists have developed a new technique to view brain cell activity in the visual cortex. A special magnetically-sensitive dye is used to "light up" active brain cells, so patterns of brain activity can be monitored on-line.

It's long been known that people show different brain patterns each time they look at a specific picture, even though the picture itself doesn't change. But researchers have now

discovered organized patterns in this apparently random brain activity patterns that will help them to understand what the brain is actually "seeing."

"We have found that differences in brain activation can be attributed to differences in thoughts and moods," observed Richard Evans, a senior researcher at the University of Toronto. "People can look at the same object over and over again, but their brain will respond differently each time depending on what they are thinking and how they are feeling. The way

their brain represents what they are looking at will change as their thoughts change."

Researchers can now assess activity that is taking place in a person's visual cortex as it occurs.

"This new monitoring device will make a big difference to research that is being done in this area," Evans noted. "We will be able to develop a much more precise understanding of visual cortex functions."

Scientists are now working on the development of similar techniques to map other areas of the brain.

Psychology Today March/April, 1996

EDUCATION

## Reassurance for university students

In their first year of university, Canadian students typically experience a sudden dive in their grades. Individuals who were at the top of their high school class are distressed to see their marks go down a full letter grade or even worse. Campus counselling offices and study skills groups are booked solid from November on, as students try to find ways to cope with new-found academic concerns.

However, Richard Evans, an Educational Sociologist at the University of Toronto, has reassuring news for those starting out in university. Results of a six-year

nation-wide study indicate that although many students starting university experience academic problems, this will not typically affect their overall standing at graduation.

"First year grades just aren't diagnostic of how well a student is going to do academically," Evans noted. "Students have a lot of adjustments to make in their first year. It can take them a year or two to adapt to university life. The lecture and lab format is generally new for them, and it can take a while before they learn how to work within this kind of environment. In addition, many

have moved away from home for the first time. They are facing new social situations and pressures, and these are things that can affect their grades."

Evans points out that first year grades do not provide an accurate indication of how well students are going to do down the road. "We have found that high school graduating grades are better at predicting how students will do in university and in their careers than their first term university grades are. There are just so many other factors affecting students in their first year."

Psychology Today March/April, 1996

Increased Attainability Condition

**Appendix B**

**Study 1: Target Manipulation Materials**

3 UW Gazette, September 11, 1996

## Alumni Award Winner Announced

The Waterloo Alumni Committee announced last week that the prestigious R.J. Maire Alumni award will be presented to Jeffrey Walker, a graduate of the Waterloo School of Architecture. The award is presented each year to a former Waterloo student who has achieved distinction in the field of architecture.

For those who have observed Walker's meteoric rise in his field, the announcement came as no surprise. Walker graduated from Waterloo at the top of his class seven years ago, and has since risen to the top of his profession. Following his graduation, he began work for Andersen and MacCrae, a prestigious international design company. He was rumoured to have been offered one of the highest salaries in the company's history for a new employee, and has recently become one of the youngest partners ever within this highly-respected firm. He has been involved in the design of some of the world's most impressive building projects (including the new Brazilian Parliament buildings, and the re-design of the Tokyo Stock Exchange).

Chris Wilkinson, a senior executive with Andersen and MacCrae, commented, "We are really lucky to have Jeffrey on board. He has been a tremendous asset to the company, and has an extraordinary talent for creative and innovative design work. He has already achieved more in his career than most architects accomplish in their lifetimes. We are delighted to know that his successes are being recognized by his alma mater."

When announcing the award, Anne Robertson, Chair of Alumni affairs, praised Walker, noting, "It's wonderful to see someone who is so committed to excellence in building design. Such dedication to architecture is what we hope to encourage through this award."

Walker himself is delighted to be the recipient of the prestigious award. "It's very gratifying to come back to receive an award at the place where you developed your career skills," he observed. "It's wonderful being back on campus, seeing all the architecture students get started just like I did a few years ago. It reminds me of the very rewarding time that I spent here in the School of Architecture."

During his stay in Waterloo, Walker will be speaking to students from the School of Architecture on the development of a successful career in building design. "I'm very happy to have the chance to speak to some of the new students here, and to make them aware of some of the professional opportunities available to them in our field," he commented.

The Alumni Award will be presented to Walker at a private awards ceremony at Hagey Hall next Thursday.

## Target Who Overcame Poor Grades

UW Gazette, September 11, 1996

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Following the awards presentation, Walker will be holding a seminar on the development of a successful career in building design for first year architecture students. "I'm very happy to have the chance to speak to some of the new students here, and to make them aware of some of the professional opportunities available to them in our field," she commented. "My first year at Waterloo was a difficult one. I saw my grades drop way down after high school, and I was pretty worried for a while. But I just kept plugging away, and now I've managed to develop the career I always wanted. I'd like to share that experience with the new students here."

The Alumni Award will be presented to Walker at a private awards ceremony at Hagey Hall next Thursday.

## Appendix C

### Study 1: Target Rating Scale

We would like to ask you about your perceptions of the person described in the article you read. Using the following scale, please rate what you think this person is like on the traits listed below.

1	2	3	4	5	6	7	8	9	10	11
Not at All										Very
1. friendly			_____				21. selfish			_____
2. successful			_____				22. sincere			_____
3. likable			_____				23. career-oriented			_____
4. powerless			_____				24. a good leader			_____
5. moody			_____				25. incompetent			_____
6. ambitious			_____				26. calm			_____
7. bright			_____				27. generous			_____
8. argumentative			_____				28. inferior			_____
9. insecure			_____				29. nasty			_____
10. skillful			_____				30. inventive			_____
11. affectionate			_____				31. inadequate			_____
12. lazy			_____				32. capable			_____
13. emotional			_____				33. inefficient			_____
14. gifted			_____				34. unpleasant			_____
15. self-doubting			_____				35. organized			_____
16. well-rounded			_____				36. unintelligent			_____
17. sympathetic			_____				37. pessimistic			_____
18. accomplished			_____				38. fearful about the future			_____
19. effective			_____				39. conservative			_____
20. flexible			_____				40. helpful			_____

## Appendix D

### Study 1: Relevance Rating Scale

People often seek information about themselves by comparing themselves to other people. We tend to judge our own abilities, skills, interests, etc. by looking at how well the people around us are doing. Some people are more relevant to us than others for the purpose of comparison.

How relevant is Jennifer/Jeffrey Walker to you for the purpose of comparison? Please circle the appropriate number on the scale below.

1	2	3	4	5	6	7	8	9	10	11
Completely Irrelevant										Very Relevant

In the space below, please explain why you answered the way you did.

## Appendix E

### Study 1: Perceived Attainability, Identification with Target, and Positivity of Target Scale

Using the scale below, please write the appropriate number in the blank beside each statement.

1	2	3	4	5	6	7	8	9
very strongly disagree	strongly disagree	moderately disagree	slightly disagree	neutral	slightly agree	moderately agree	strongly agree	very strongly agree

1. \_\_\_\_\_ Jennifer/Jeffrey Walker's achievements are attainable for me. (A)
2. \_\_\_\_\_ Jennifer/Jeffrey Walker is the kind of person I would use as a role model. (I)
3. \_\_\_\_\_ I disliked Jennifer/Jeffrey Walker. (P)
4. \_\_\_\_\_ I will never be as successful as Jennifer/Jeffrey Walker. (A)
5. \_\_\_\_\_ I see patterns in Jennifer/Jeffrey Walker's life that match patterns in my own. (I)
6. \_\_\_\_\_ I thought about myself when I was reading about Jennifer/Jeffrey Walker. (I)
7. \_\_\_\_\_ I would like to meet Jennifer/Jeffrey Walker. (P)
8. \_\_\_\_\_ Jennifer/Jeffrey Walker has no bearing on my life. (I)
9. \_\_\_\_\_ I respect Jennifer/Jeffrey Walker. (P)
10. \_\_\_\_\_ Jennifer/Jeffrey Walker's career achievements are out of my reach. (A)
11. \_\_\_\_\_ Jennifer/Jeffrey Walker seems like an interesting person. (P)
12. \_\_\_\_\_ My achievements will be as spectacular as those of Jennifer/Jeffrey Walker. (A)
13. \_\_\_\_\_ Jennifer/Jeffrey Walker is someone I'd like to work with. (P)
14. \_\_\_\_\_ Jennifer/Jeffrey Walker is very different from me. (I)
15. \_\_\_\_\_ Jennifer/Jeffrey Walker probably has difficulty relating to other people. (P)
16. \_\_\_\_\_ Jennifer/Jeffrey Walker has accomplished more in his/her career than I can hope to. (A)
17. \_\_\_\_\_ I can identify strongly with Jennifer/Jeffrey Walker. (I)
18. \_\_\_\_\_ In the future, I will be a person like Jennifer/Jeffrey Walker. (A)

- (A) Items used in attainability index  
(I) Items used in identification index  
(P) Items used in positivity index

## Appendix F

### Study 1: Inspiration Rating Scale

Sometimes the individuals we meet or read about have an effect on how we feel about ourselves. Take a moment to consider the kind of effect that Jennifer/Jeffrey Walker may have had on you: Did she/he make you feel discouraged about your future, or inspired? Now, please rate how the person you read about made you feel. Circle the appropriate number on the scale below.

-6   -5   -4   -3   -2   -1   0   1   2   3   4   5   6  
Very   Very  
discouraged   Inspired

Appendix G: Results of analyses for Study 1 including data from participants in the increased attainability condition

Ratings of Target. Success-related items were averaged into a single index of the target's success after first reversing the negative items (Cronbach's  $\alpha = .86$ ). Target ratings were regressed on grade information condition, target type condition, and self-esteem. There were no main effects or interactions (all  $p$ s  $> .10$ ).

Self-Ratings. Self-ratings were averaged into an index of success as target ratings had been (Cronbach's  $\alpha = .88$ ). A multiple regression analysis revealed that the effects of target and self-esteem depended on the attainability information given, as indicated by a significant three-way (Target X Self-Esteem X Attainability) interaction,  $F(2, 127) = 4.60$ ,  $p = .01$ .

The attainability manipulation had an unexpected impact on participants, as can be seen in the self-ratings of participants in the no target control conditions in the neutral and increased attainability information conditions. At low levels of self-esteem (1 SD below the mean), the information that grades are not diagnostic had a negative impact on the self-ratings of no target control participants,  $t(42) = 2.82$ ,  $p = .008$ ; low self-esteem participants exposed to the increased attainability information rated themselves less positively than participants exposed to the neutral information. In contrast, at high levels of self-esteem (1 SD above the mean), the information that grades are not diagnostic had a positive impact on no target control participants,  $t(42) = 2.47$ ,  $p = .02$ ; high self-esteem participants exposed to the increased attainability information rated themselves more positively than high self-esteem participants in the neutral information condition.

I had expected that the information that one's first year grades are not diagnostic would serve as an attainability manipulation, suggesting to participants that they would be able to overcome the drop in their grades, just as the target who overcame poor grades had done. This was not the case. Instead, the increased attainability information had an

unexpectedly negative impact on low self-esteem participants, and a positive impact on high self-esteem participants. High self-esteem individuals appear to have interpreted the increased attainability information optimistically, as an indication that they would be able to improve, leading them to evaluate themselves more positively. Low self-esteem individuals, in contrast, appear to have interpreted this information negatively; it may have reminded them of their existing grade problems without offering any clear hope for improvement. This effect was unexpected, but is consistent with research showing that high self-esteem individuals are more likely to interpret new information in a self-serving manner (cf. Blaine & Crocker, 1993). This finding is also consistent with recent research in the domain of close relationships, showing that information that leads individuals to ruminate on their own experiences, will, even when the information is positive, have a negative impact on low self-esteem individuals, and a positive impact on high self-esteem individuals (Murray, Holmes, MacDonald, & Ellsworth, in press).

In the increased attainability condition, neither of the targets had any impact on participants over and above the impact of the increased attainability manipulation; neither the target type main effect, nor the simple target type by self-esteem interaction effect were significant, both  $F_s < 1$ . There was a main effect of self-esteem,  $t(60) = 2.43$ ,  $p < .0001$ ; high self-esteem participants in all conditions rated themselves more positively than did low self-esteem participants.

Thus, it seems likely that the targets failed to exert their expected impact because the attainability manipulation on its own affected their self-perceptions. The self-ratings of low self-esteem individuals were negatively affected by the information that grades are not diagnostic, possibly because this information simply highlighted a problem they were experiencing. The targets did not exert any further impact on the self-ratings of low self-esteem participants. The self-ratings of high self-esteem individuals were positively affected by the information that grades are not diagnostic. The targets did not exert any

further impact on self-ratings, possibly due to a ceiling effect: High self-esteem participants' self-ratings could not be boosted any further because the attainability information had already raised their self-ratings to a high level.

Grade Predictions. A multiple regression analysis revealed a marginally significant three-way (Self-esteem X Target Type X Attainability) interaction for participants' grade predictions,  $F(2, 127) = 2.95, p = .056$ . The effects of target type and self-esteem again depended on the type of attainability information that participants had been given.

The simple self-esteem by target type interaction was not significant for the increased attainability condition,  $F < 1$ . The main effect of target type was also not significant,  $F < 1$ . However, there was a main effect of self-esteem,  $F(1, 60) = 2.28, p = .03$ ; low self-esteem individuals predicted lower term grades than did high self-esteem individuals across target type conditions. This finding parallels the pattern of results obtained for the self-ratings items; neither target had any impact on participants' grade predictions.

Class Standing Predictions. A regression analysis also revealed a marginally significant three-way (Self-esteem X Target Type X Attainability) interaction for the class standing predictions,  $F(2, 126) = 2.56, p = .08$ . As with self-ratings and grade predictions, the effects of target type and self-esteem depended on the attainability condition.

In the increased attainability condition, the simple self-esteem by target type interaction effect was not significant,  $F < 1$ . The main effect of target type was also nonsignificant,  $F < 1$ . However, there was a significant main effect of self-esteem,  $F(1, 59) = 2.43, p = .02$ ; low self-esteem participants predicted a poorer class standing than did high self-esteem participants. Again, this parallels the findings for self-ratings and grade predictions in the increased attainability condition; neither target had any impact on participants' class standing predictions.

Thus, for all three self-evaluation measures, we found a significant main effect of self-esteem. Low self-esteem individuals rated themselves less positively and had less optimistic predictions regarding their future academic success than did high self-esteem individuals. The attainability manipulation failed to affect participants' perceptions of the role models' attainability.

Relevance Ratings. Relevance ratings were regressed on target type, grade information, and self-esteem. The three-way (Target type X Self-Esteem X Attainability) interaction was not significant,  $F < 1$ .

There was a significant main effect of self-esteem,  $t(91) = 2.51, p = .03$ ; individuals with higher self-esteem rated both targets as more relevant than did individuals with lower self-esteem across attainability conditions. However, this main effect was qualified by a significant target type by self-esteem interaction,  $t(88) = 2.26, p = .03$ . Low self-esteem participants in both attainability conditions rated the overcame poor grades target as more relevant than the no obstacles target,  $t(88) = 1.72, p = .09$ , whereas high self-esteem participants did not differ in their rating of the overcame poor grades target and the no obstacles target,  $t(88) = 3.22, p = .15$ . There were no other main effects or interactions, all  $ps > .25$ .

Thus, the relevance ratings in the increased attainability condition did not differ from those in the neutral information condition. This suggests that the increased attainability information may not have wiped out the effects of the targets on participants, but rather, that the effects could not be detected because the increased attainability information on its own had an impact on participants.

Identification With Target. Identification items were averaged into a single index of identification with the target after first reversing the negative items (Cronbach's  $\alpha = .88$ ). Identification ratings were regressed on target type, self-esteem, and attainability condition.

The three-way (Target Type X Self-Esteem X Attainability) interaction was not significant,  $F < 1$ .

The identification with target results parallel the results for the relevance measure. There was a significant main effect of self-esteem,  $t(92) = 4.18$ ,  $p = .04$ ; high self-esteem participants identified with the targets more than did low self-esteem participants across attainability conditions. However, this main effect was qualified by a significant target-type by self-esteem interaction,  $t(89) = 2.42$ ,  $p = .02$ . Low self-esteem participants in both attainability conditions identified with the overcame poor grades target more than with the no obstacles target,  $t(89) = 2.43$ ,  $p = .02$ . High self-esteem participants did not differ in their identification with the two targets,  $p > .15$ . There were no other main effects or interactions, all  $ps > .30$ .

Attainability Ratings. The attainability items were averaged into a single attainability index after first reversing the negative items (Cronbach's  $\alpha = .86$ ). Attainability ratings were regressed on target type, self-esteem, and attainability condition. The three-way (Target Type X Self-Esteem X Attainability) interaction was not significant,  $F < 1$ .

There was a significant main effect of self-esteem,  $t(92) = 5.19$ ,  $p < .0001$ ; high self-esteem participants rated the achievements of both targets as more attainable than did low self-esteem participants across conditions. There were no other main effects or interactions, all  $ps > .10$ .

Had the attainability manipulation worked as planned, we would have expected to find a significant main effect of attainability condition on this measure; participants who received the increased attainability information should have rated the targets' achievements as more attainable than participants in the neutral information condition. The absence of this main effect confirms that the attainability manipulation was not successful.

Positivity Ratings. The positivity items were averaged into a single positivity index after first reversing the negative items (Cronbach's  $\alpha = .71$ ). Positivity ratings were regressed on target type, self-esteem, and attainability condition. The three-way (Target Type X Self-Esteem X Attainability) interaction was not significant,  $F < 1$ .

There was a marginally significant main effect of self-esteem,  $t(92) = 1.88$ ,  $p = .06$ ; participants with higher self-esteem rated the targets more positively than did participants with lower self-esteem across conditions. There were no other main effects or interactions, all  $ps > .15$ .

Inspiration Ratings. Inspiration ratings were regressed on target type, self-esteem, and attainability. The three-way (Target Type X Self-Esteem X Attainability) interaction was not significant,  $F < 1$ .

There was a significant main effect of self-esteem on the inspiration measure,  $t(91) = 3.52$ ,  $p = .0007$ ; high self-esteem participants rated both targets as more inspirational than did low self-esteem participants across attainability conditions. However, this main effect was again qualified by a significant target type by self-esteem interaction,  $t(88) = 2.16$ ,  $p = .03$ . Low self-esteem participants rated the overcame poor grades target as more inspirational than the no obstacles target,  $t(88) = 1.86$ ,  $p = .07$ , whereas high self-esteem participants tended to rate the overcame poor grades target and the no obstacles target as equally inspirational,  $t(88) = 1.14$ ,  $p = .26$ . There were no other main effects or interactions, all  $ps > .50$ .

Appendix H  
Study 2: Target Materials

6 UW Gazette, September 11, 1996

## Alumni Award Winner Announced

The Waterloo Alumni Committee announced last week that the prestigious R.J. Maire Alumni award will be presented to Jeffrey Walker, a graduate of the Waterloo School of Architecture. The award is presented each year to a former Waterloo student who has achieved distinction in his or her field.



*Jeffrey Walker*

For those who have observed Walker's meteoric rise in his field, the announcement came as no surprise. Walker graduated from Waterloo at the top of his class seven years ago, and has since risen to the top of his profession. Following his graduation, he began work for Andersen and MacCrae, a prestigious international architectural firm, where he has been involved in the design of some of the world's most impressive building projects (including the new Brazilian Parliament buildings, and the re-design of the Tokyo Stock Exchange). He has recently become one of the youngest partners ever within this highly-respected company.

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For those who have observed Walker's meteoric rise in his field, the announcement came as no surprise. Walker graduated from Waterloo at the top of his class seven years ago, and has since risen to the top of his profession. Following his graduation, he began work for Andersen and MacCrae, a prestigious international architectural firm, where he has been involved in the design of some of the world's most impressive building projects (including the new Brazilian Parliament buildings, and the re-design of the Tokyo Stock Exchange). He has recently become one of the youngest partners ever within this highly-respected company.

Chris Wilkinson, a senior executive with Andersen and MacCrae, commented, "We are really lucky to have Jeffrey on board. He has been a tremendous asset to the firm, and has an extraordinary talent for creative and innovative design work. He has already achieved more in his career than most architects accomplish in their lifetimes. We are delighted to know that his successes are being recognized by his alma mater."

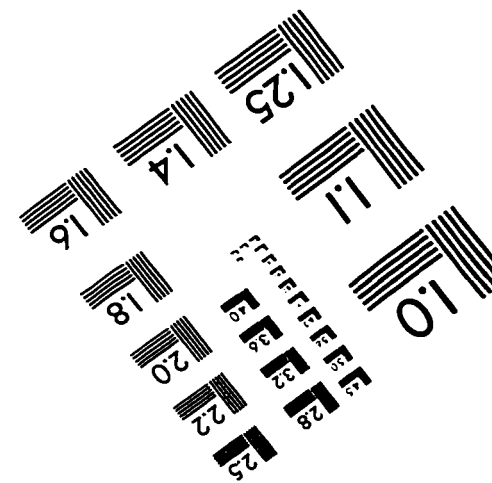
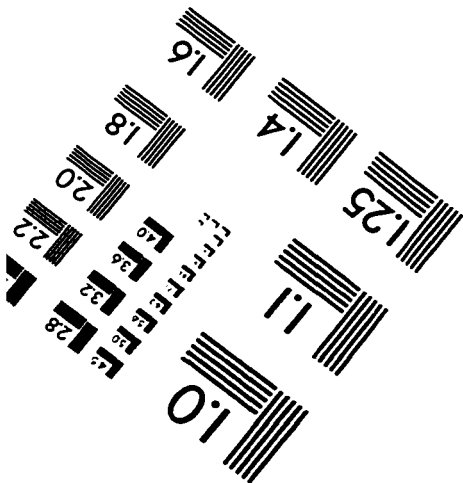
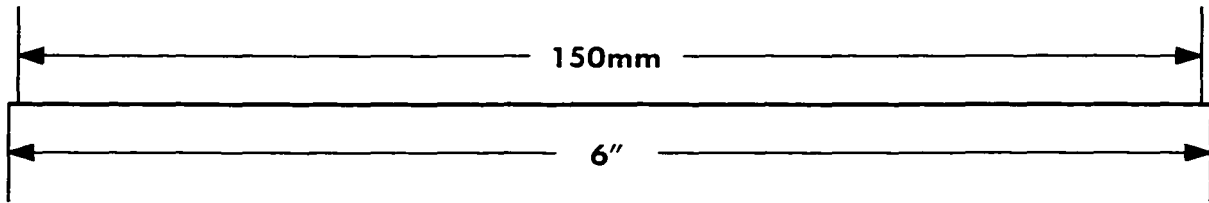
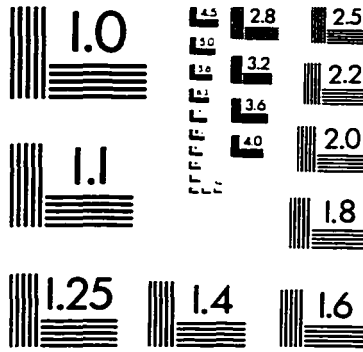
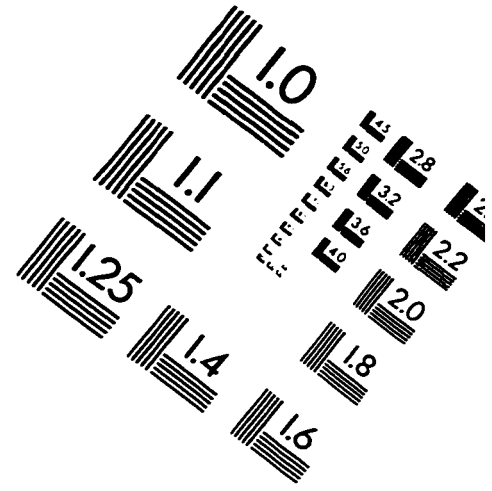
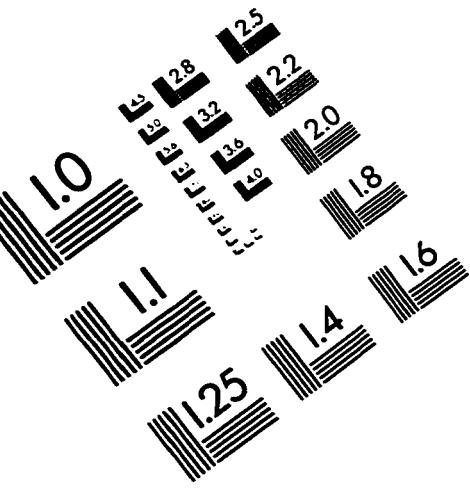
When announcing the award, Anne Robertson, Chair of Alumni affairs, praised Walker, noting, "It's wonderful to see someone who is so committed to excellence. Unfortunately, there are still a lot of barriers to success for Black Canadians in professional fields. Members of minorities still run up against discrimination when they are working in conservative professions. The fact that Jeffrey overcame such barriers makes this award even more special. By breaking through a traditional glass ceiling, he shows others what is possible for them. The tremendous professional dedication he has shown is what we hope to encourage through this award."

Walker himself is delighted to be the recipient of the prestigious award. "It's very gratifying to come back to receive an award at the place where you developed your career skills," he observed.

During his stay in Waterloo, Walker will be speaking to students from the School of Architecture on the development of a successful career in building design. "I'm very happy to have the chance to speak to some of the new students here, and to make them aware of some of the professional opportunities available to them in our field," he commented.

The Alumni Award will be presented to Walker at a private awards ceremony at Hagey Hall next Thursday.

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